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OT Dept

Part I

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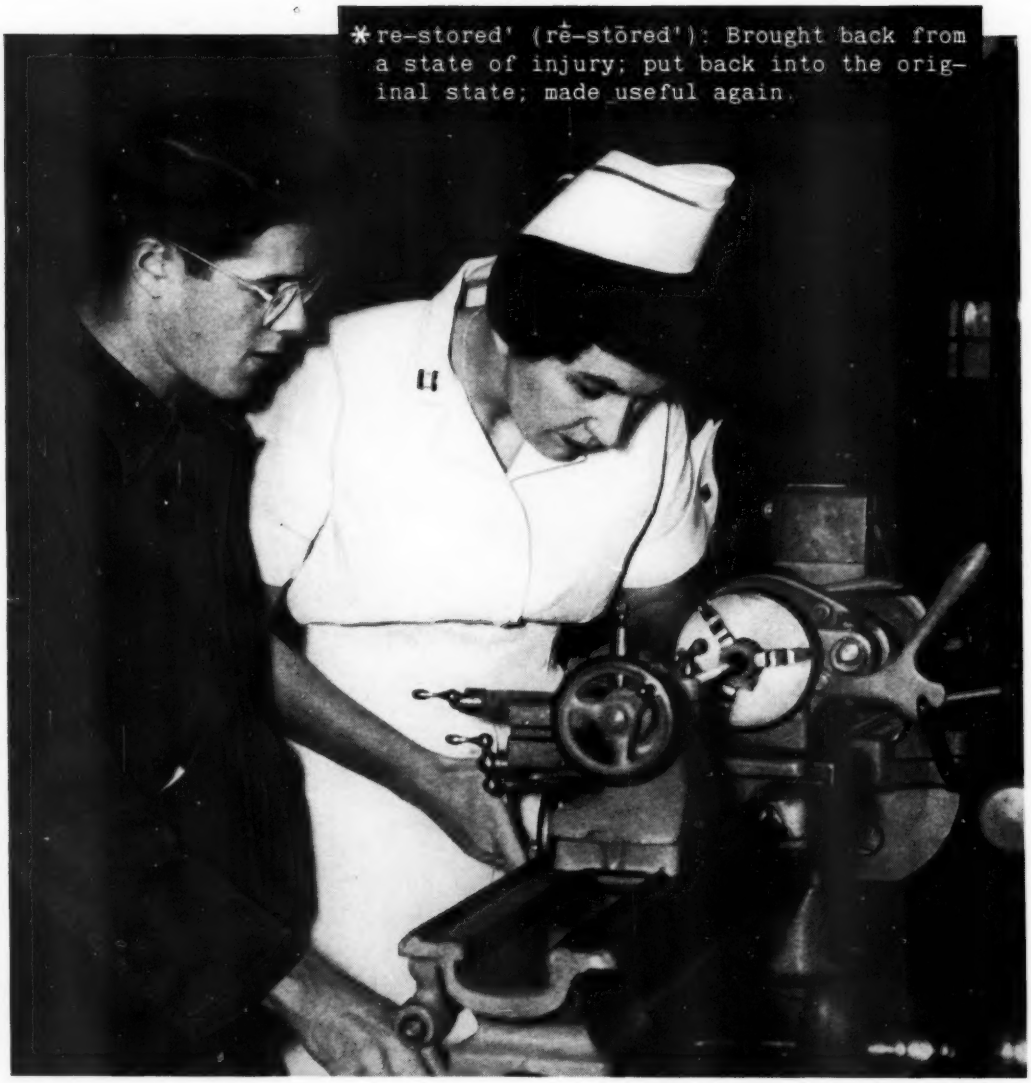

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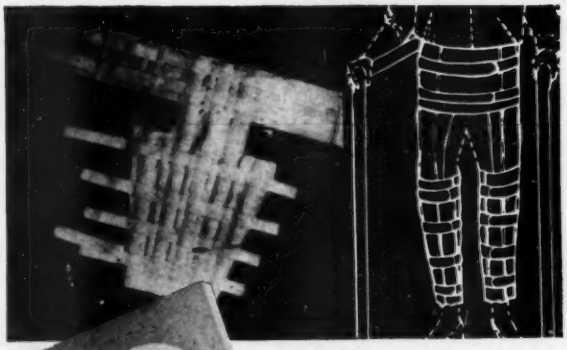

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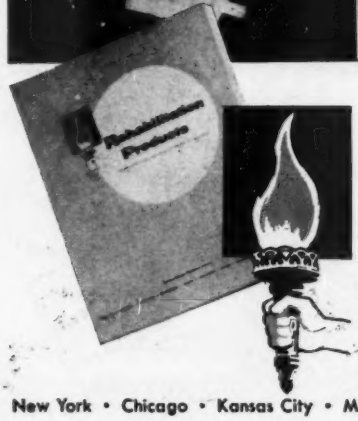

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THE MEASUREMENT OF WRITING SKILL IN PHYSICALLY HANDICAPPED CHILDREN

ANTJE PRICE, O.T.R.*

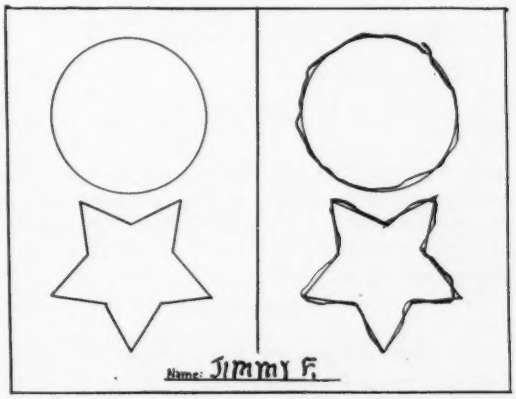
INTRODUCTION

In compiling the clinical data for the article[1] from which the Illinois Laterality Battery[2] evolved, an apparent relationship was noted between scores on one of the tests, "Tracing," and the ability to write. In this study the relationship has been further explored to discover if it might serve as a diagnostic measure of handwriting difficulties in physically handicapped children.

The training or re-training of handwriting, especially in cases complicated by severe or multiple disability, is often a major task of the occupational therapist. Having a method of evaluation to apply in setting realistic and attainable goals may result in more effective and successful training as well as minimizing effort expended on fruitless enterprise. Furthermore, it is hoped that devices of this nature may make a substantial contribution to research in occupational therapy, since objective, meaningful and universal methods of appraising individual variation in function are basic to all studies in this area.

THE PROBLEM

It is generally conceded that handwriting is one of the highest and most complex functions of which the human organism is capable. The ability to grasp a pencil and move it across the page to form a series of legible symbols requires the successful marshalling and control of many varied forces. There must be perception of the units to be transcribed, both as forms in relative positions in space and, on a higher level, as meaningful symbols of language; further, these perceptions must be retained, elaborated and reproduced. There must be an organ to hold the pencil, supplied with a well-functioning system of pathways that permit it to be guided in intricate movements, as well as allowing the patterns



Sample Tracing Test form. Tracing on the right half: circle, 5½"; star: 6"; total: 11½" (50%).

of these motions to be relayed to and recorded in a higher center as a foundation for further elaboration. There must be sufficient maturity of the nervous system to make application to this task of learning possible, and enough experience, especially in communication, to make it meaningful.

In attempting solution of handwriting problems, each of these forces must be analyzed and the locus of specific disturbances elicited. Reliable standard forms of measurement are available in many areas; tests of intelligence, maturity, readiness, vision, muscle strength and joint mobility are universally used. However, a special problem exists in cases of cerebral palsy where experience has shown many of these tests to be of only relative usefulness. Lack of ability to communicate, neurological retardation, lack of experience, or specific brain damage tend to obscure the expres-

*Staff Occupational Therapist, Illinois Children's Hospital-School, Chicago, Illinois.

sion of the degree of perception, comprehension and maturity extant.

More specifically, tests of muscle strength contribute little to an understanding of the physical defect in cerebral palsy, since in most cases the disability consists in lack of control rather than lack of strength. This is especially true in relation to writing which requires balanced, coordinated power rather than pure force. Frequently there is an excess of strength and a dis-coordination involving the many different muscles required to contract as well as those that should be at rest while writing. This disability—lack of control—defies direct measurement; it can be gauged only in terms of the effect it has on attempted performance.

Performance of the Tracing Test.

It was in an effort to determine whether the Tracing Test of the Illinois Laterality Battery may provide a useful functional measure for the degree of muscular control required for writing by physically handicapped children, especially the cerebral palsied, that this study was undertaken.

METHOD

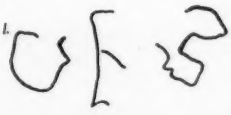
The test: The Tracing Test[2] consists of a circle and a five-pointed star, 10½" and 12½" respectively in circumference, hectographed on smooth white paper (Figure 1.) The child was asked to trace each figure, drawing with a soft pencil on the rectographed line (Figure 2). Conformity to the line was later measured in units of ¼" and recorded in units of ½", using a gauge for the circle and a ruler for the star. Total perfect score for both figures was 23"; for the sake of this study the scores were converted to percent of this total. Since it was originally used as a laterality test, two sets of figures were provided on each 8½" x 11" sheet, one set to be traced by each hand. In the present study only the score of the major or writing hand was used. The Tracing Test proved to be the most reliable skill test in the Illinois Laterality Battery; in over 90 percent of the subjects the hand habitually used for writing received the better score in tracing. Each subject was asked to sign his name on the tracing test paper.

Writing scale: Data on writing skill were obtained from the signatures plus additional information from schoolwork or occupational therapy records. Writing skill was rated by the following scale:

A. Sub-writing levels

0—*Unable*: able to hold a pencil and mark on paper, but unable to color a given area, mark a given spot, copy a given line, or make a meaningful mark.

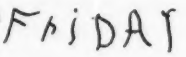
1—*Pre-Writing*: able to color a given area, mark a given spot, copy a given line and single numbers or letters, but unable to form letters from memory.



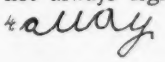
2—*Name Only*: able to write (printing in large block letters) own name only, from memory.

B. Independent writing levels

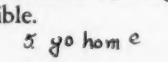
3—*Elementary Lettering*: able to use all letters to form words in elementary manuscript lettering, large, laborious, not always clearly legible.



4—*Elementary Cursive*: able to use all letters to form words in cursive script, continuous but large, laborious, not always legible.



5—*Advanced Lettering*: able to use manuscript lettering less than ⅜" high, fluent, easily written and legible.



6—*Advanced Cursive*: able to use cursive script, less than ⅜" high, fluent, easily written and legible.

Ancillary data. The following additional data were obtained for each child:

1. Age in years at the time of the test.
2. Intelligence quotient, as measured by the

psychologist using the Stanford Binet Scale form L or M, or other standard tests in a few cases. Rather than attempting to work with exact scores, broader categories were employed[3], as given below:

	I.Q. Range
I. Mentally Defective	below 69
II. Borderline	70-79
III. Dull Normal	80-89
VI. Average	90-109
V. Bright Normal	110-119
VI. Superior	120-129
VII. Very Superior	130 and above

The presence of disturbances in visual perception, whether peripheral or central, relating to space and form or to symbol learning, was also noted.

3. A muscle strength and/or joint motion index for the major arm was computed from standard manual examinations given by physical therapy. To obtain the index, twelve of the muscle groups or joint motions from scapula to thumb were given a normal value of 5 per cent each, four major groups (shoulder, elbow and finger flexion, thumb opposition) 10 per cent each, yielding a total of 100 per cent for a normal arm.

The subjects: The 114 subjects were severely physically handicapped youngsters in residence at various times at the Illinois Children's Hospital-School in Chicago, an institution in the state department of public welfare. They included 66 boys and 48 girls, ranging in age from four to twenty years. For the sake of the study they were divided into two distinct groups: (1) those with cerebral palsy, numbering 55, and (2) those with other disabilities, totalling 59, which included 18 poliomyelitis, 16 muscular dystrophy, 9 congenital and 3 traumatic paraplegia, 4 rheumatoid arthritis, 3 each amyotonia congenita and osteogenesis imperfecta, as well as 1 each with congenital absence of limbs, dermatomyositis, and acrocephaly with syndactylism. Sex distribution was the same for both groups, with boys comprising 60%; age was distributed in both groups according to the same pattern. The test was repeated at intervals of a year or more by 14 youngsters, 7 in each group.

FINDINGS

The findings in the two disability groups are given separately, since they were found to be distinct. Those for the non-cerebral palsied group are listed first since they may be presumed to set the standard; having available a fairly objective, reliable measure of arm function or disability, it is assumed that they represent the norm from which the cerebral palsied vary.

Non-Cerebral Palsied Group (59 Subjects)

Of these variously handicapped youngsters, 83 per cent were able to write. Those below the independent writing level (in levels 0 through 2) averaged seven years in age, half of them being six or younger, and none over ten. The subjects were found to have intelligence ranging from defective to very superior (I to VII), with a mean of average (IV). Muscle strength and joint motion indices ranged from 29 to 100 per cent and averaged 70 per cent; eleven children (19%) had no upper extremity involvement. Only one visual-perceptual defect was discovered in this group, and only three children were unable eventually to progress to higher levels of writing skill. Comparisons of writing skill variously with age, intelligence, and disability, as well as tracing test scores, are given in *Tables I-A* through *I-D*.

Writing Skill Comparison—Non-Cerebral Palsied Group

Of the four tables given, only *Table I-A* comparing writing skill and age shows any consistently significant relationships. Certainly *Table I-D* (*Tracing Test*), with its broad range of test scores at every writing skill level, indicates little more than that no child achieved less than 40 per cent (9″) and only two less than 50 per cent (11.5″) of the total possible tracing score and that, wth one exception, only those who could use cursive script received scores above 80 per cent in tracing. *Tables I-B* and *I-C* seem significant only at the extremes.

Interpretation. It was surmised that interpretation of any factors given in the tables might best be accomplished in terms of age. A superficial glance at *Table I-A* (*Age*) indicates that writing ability advances with age: independent writing (3-*Elementary Lettering*) begins at age six, cursive writing is generally achieved at age nine. This is consistent with teaching methods used in Illinois and at the hospital-school, where manuscript writing is taught in the first grade and cursive script begun in the third grade (age eight to nine). It is in terms of the exceptions to the general rule, however, that this study becomes meaningful for physically handicapped children.

Every non-cerebral palsied child was able to make some meaningful mark on paper; that is, there were none at the 0-*Unable* writing skill level.

At level 1-*Pre-writing*, four of the five children had no school experience prior to admission to the hospital-school, at which time they were tested. All these had average intelligence except for one who was bright-normal but suffered from

TABLE I-A Age

Age in Years:		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Adv. Cursive	6						2	1	2	2	4	1	3	3	4	1	1	2	26
Adv. Lettering	5						1					2							3
Elem. Cursive	4				1		1	1	3		1				1				8
Elem. Lettering	3			1	5	2	1	1	1	1									12
Name Only	2	1				2	1	1											5
Pre Writing	1		1	3	1														5
Unable	0																		0
		Under Age			Manu-script		Cursive Script												59

TABLE I-B Intelligence

I.Q. Grouping:		I	II	III	IV	V	VI	VII	Total
Adv. Cursive	6			4	12	6	3	1	26
Adv. Lettering	5			2	1				3
Elem. Cursive	4	1	1	2	4				8
Elem. Lettering	3		2	4	6*				12
Name Only	2			1	4				5
Pre-Writing	1			1	3	1			5
Unable	0								0
*Visual-perceptual Defect (1 child)									59

TABLE I-C Disability (Muscle Strength and Joint Range Index)

% of Normal:		0	10	20	30	40	50	60	70	80	90	100	Total
Adv. Cursive	6				2	6	4	2	2	1	1	7	26
Adv. Lettering	5			1			1	1					3
Elem. Cursive	4			1		1	3	1	1			1	8
Elem. Lettering	3					2	1	2	2		1	3	11*
Name Only	2						1	1		2			4*
Pre-Writing	1								3		1	1	5
Unable	0												0
*No Index (1 child)													57

TABLE I-D Tracing Test

Score in %:		0	10	20	30	40	50	60	70	80	90	100	Total
Adv. Cursive	6						2	2	3	11	5	3	26
Adv. Lettering	5					1			2				3
Elem. Cursive	4						2	1	2	1	1	1	8
Elem. Lettering	3						6	5	1				12
Name Only	2					1	1	1	1		1		5
Pre-Writing	1						3	1	1				5
Unable	0												0
													59

Writing Skill Comparisons—Non-Cerebral Palsied Group

congenital profound deafness in addition to his poliomyelitis. The remaining child was dull-normal, an immature, infantilized child with some exposure to school.

At level 2-*Name Only* all children had average intelligence except the ten-year-old, who was dull-normal, with severe emotional overlay. One eight-year-old was severely disabled by congenital absence of both arms. The other two children had not been exposed to schooling prior to the test. One of these was the only child not using cursive writing who received a tracing score of over 80 per cent; he was a mechanically skilled child who has mastered cursive writing since the testing. All the children on the first two levels were subsequently able to master independent writing.

At level 3-*Elementary Lettering* the exceptions to learning independent lettering at six and abandoning it at nine for cursive writing were: a ten-year old of borderline intelligence; an eleven-year-old with progressive disability, dull-normal intelligence and severe emotional disturbance; and a twelve-year-old dull-normal immature child whose deformities prevented his obtaining the continuity of motion necessary for

cursive writing. The latter two, as well as the younger brother of the eleven-year-old, were unable to advance beyond this category. The visual-perceptual problem belonged to an eight-year-old in this group.

At level 4-*Elementary Cursive* one child of average intelligence but precocious skill and application was using cursive writing at the age of seven. The only mental defective, a nine-year-old, was in this group; however, his disability, physical as well as mental, was progressive and he had tested average at an earlier age. The thirteen- and seventeen-year-old had severe disabilities involving both strength and range of motion, the latter with a progressive disability that left him less than 30 per cent of normal power as well as numerous contractures in his writing arm.

The youngsters at level 5-*Advanced Lettering* all seemed to be exceptional cases. The nine-year-old was able to achieve advanced cursive at age ten, but reverted briefly to advanced lettering a year later, with a drop in muscle strength and tracing test score. Both she and a fourteen-year-old had dull-normal intelligence and a progressive disability. The other fourteen-year-old was severely handicapped, with less than 30 per cent of normal range of motion in the writing arm (right) as well as a fixed torsion of the head to the opposite side (left).

The only outstanding notations of level 6-*Advanced Cursive,* where 44 per cent of the non-cerebral palsied achieved, seemed to be: that no child with a muscle strength or joint motion index of less than 35 per cent was found; that no tracing test score below 55 per cent was seen and that roughly three-fourths of the students had scores over 80 per cent; and that no children below dull-normal (under 80 I.Q.) and 10 of the 11 cases with more than average intelligence (over 110 I.Q.) were located at the highest writing level.

Retests. In tabulating the results of retests taken by seven of the children after intervals of a year or more, both the original and the retest tracing scores (in per cent) were placed below the requisite writing skill levels, as seen in *Table I-E.*

In these few cases a general trend for increased tracing scores with improved writing skill may be noted, despite the absence of such a trend in earlier findings; conversely, a regression in writing skill accompanied by decreased tracing ability is found in one case with a progressive disability.

II. Cerebral Palsied Group (55 *Subjects*)

Only 38 per cent of the cerebral palsied were able to achieve independent writing, in contrast to the high level (83%) of the non-cerebral palsied group. Those essentially unable to write (levels 0-2) average nine years in age, and only one-seventh were six or younger, with one-third over the age of ten.

Intelligence in the cerebral palsied group ranged from mentally defective to superior (levels I to VI), average dull-normal (level III); there were 12 children with known visual-perceptual defects. There were 27 youngsters, operating at writing skill level 4-*Elementary Cursive* or lower, who were unable to progress subsequently to higher writing achievement. The 38 muscle strength indices available ranged from 38 to 100 per cent, with a mean of 74 per cent; the 17 children without measurement of disability varied from total involvement to no discernible handicap in the arms. Since the muscle strength indices gave only limited information concerning disability in these cases, additional data indicating how many subjects possessed the ability to speak clearly, feed themselves or walk (with or without appliances) has been appended to the disability table. Comparison of writing skill with the four major factors is given in *Tables II-A* through *II-D.*

TABLE I-E Retests (Tracing Test and Writing Skill)

Subjects	Ages	Writing Skill Levels: 1	2	3	4	5	6
1. M.D.	5 to 6	54	56%				
2. K.S.	10 to 12		43	58%			
3. J.J.	7 to 10				86		95%
4. E.P.	10 to 13				60		77%
5. I.J.*	10 to 11				60		88%
6. M.E.	11 to 17				100		100%
7. R.D.*	9 to 10 to 11					73 58	75%

*Progressive Disability

Writing Skill Comparisons—Cerebral Palsied Group

A study of the tables comparing writing skill with the four factors measured seems to indicate that *Table* II-*D Tracing Test* brings out the most significant data. *Table II-A Age* shows little distinction at the sub-writing level (Levels 0, 1, and 2). Rather than the trend of the non-cerebral palsied group—manuscript at six years, cursive at nine—we see independent lettering closer to nine years and cursive writing beginning at twelve but not perfected until age fifteen.

TABLE II-A Age

Age in Years:		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Adv. Cursive	6												2		1		1		4
Adv. Lettering	5																		0
Elem. Cursive	4									1	3	2		3	1				10
Elem. Lettering	3		1		1		2	1			1			1					7
Name Only	2			2	1	3	1				1			1					9
Pre-Writing	1	1			4	4	2		3	1			1						16
Unable	0		1	1	2			1	1			2				1			9
		Under Age		Manuscript				Cursive Script											55

TABLE II-B Intelligence

I.Q. Grouping:		I	II	III	IV	V	VI	VII	Total
Adv. Cursive	6			1	3				4
Adv. Lettering	5								0
Elem. Cursive	4	1	3		2*	2	2		10
Elem. Lettering	3	1	1	3	2*				7
Name Only	2	2*	2	2	3*				9
Pre-Writing	1	8***	2	3*	3*				16
Unable	0	1	2**	3*	3				9
Visual-perceptual Defect (= 1 child)									55

TABLE II-C Disability (Muscle Strength Index; Functional Ability)

% of Normal:		0	10	20	30	40	50	60	70	80	90	100	Total	Speech	Feed	Walk	Total
Adv. Cursive	6						1				1		2	2	3	2	4
Adv. Lettering	5												0				0
Elem. Cursive	4							1	2	4	1	1	9	10	10	8	10
Elem. Lettering	3							1		2	1	1	5	6	7	5	7
Name Only	2				1		1	1		1	2		6	8	6	7	9
Pre-Writing	1			2			3	4	3				12	10	12	10	16
Unable	0					1	3						4	4	4	4	9
																	55

TABLE II-D Tracing Test

Score in %:		0	10	20	30	40	50	60	70	80	90	100	Total
Adv. Cursive	6							1	1		1	1	4
Adv. Lettering	5												0
Elem. Cursive	4				1	1	3	1	1	3			10
Elem. Lettering	3		1	2		2	2						7
Name Only	2	1	4	2	1		1						9
Pre-Writing	1	2	5	6	3								16
Unable	0	4	3	1			1						9
													55

Writing Skill Comparisons—Cerebral Palsied Group

Table II-B Intelligence again reveals a wide scatter in the non-writing area. The elementary writing levels (3 and 4) contained a smaller proportion of youngsters with low intelligence (I and II) and the advanced cursive group included none below III (dull-normal). The two mental defectives who achieved independent writing were at the upper extreme of their retarded intelligence ranges, i.e. 68 and 69, while the defectives unable to write averaged in the low sixties.

Table II-C Disability bears out the pattern seen on the other charts: a wide scatter at the sub-writing level, with the independent writing area limited to those of ability (50% of normal power or over). However, it must be recalled that this table represents only two-thirds of the cerebral palsied group and, further, that muscle strength is not a reliable indicator of disability in this diagnostic category. The appended chart on functional ability indicated that those unable to write also tended to be deficient in other functions, but that advances in these paralleled improvement in writing, except at the advanced cursive level..

Table II-D Tracing Test shows a fairly clear pattern of progression in writing skill associated with increased tracing test scores, with few exceptions. This is the only one of the charts not given to a random scatter of scores below the independent writing level. As with the non-cerebral palsied group, none of whom scored below

this level, 9" or 40 per cent of the total possible tracing score seems to be the critical point. Of the cerebral palsied children who were unable to write, 94 per cent received scores below 9"; of those who were able to achieve independent writing, 84 per cent produced tracing scores above 9". Furthermore, most of the exceptions to this rule, as will be detailed below, were clearly subject to extenuating circumstances that accounted for their deviations in either tracing score or writing skill.

Interpretation. Interpretation of the various factors in the tables for the cerebral palsied group may be given in terms of the most meaningful one, tracing skill. Again the exceptions to the general rule are found to yield the most important clues to writing disabilities.

At the 0-*Unable* level tracing scores ranged generally from 7 to 13 per cent, with exceptions at 26 and 52 per cent; the former was a severely disabled child who used a cardboard guide to achieve a higher tracing score, the latter a mildly physically involved youngster with a severe central defect affecting symbol comprehension. None were able to progress to a higher writing category, although two achieved independent typing. The group was characterized generally by severe disability of the athetoid or mixed type, or in exceptional cases by milder physical impairment with an extreme mental or perceptual defect.

At level 1-*Pre-Writing* tracing scores ranged from 7 to 34 per cent. Five youngsters had visual perceptual defects and three more showed retarded language development as a result of hearing loss. The physical defects were mild to moderately severe, three-fourths resulting from extrapyramidal lesions. Two children with average intelligence were severely handicapped, but one was able to type. In all others intelligence was below average, and eight, or one-half of the total group, were defective. Of this entire group, 75 per cent were unable to progress beyond the pre-writing level. Nearly one-half of the children in the pre-writing group had not established laterality, regardless of age, indicating considerable immaturity.

Level 2-*Name Only,* ranging similarly in tracing score from 9 to 37 per cent, with an exception at 52 per cent, nevertheless differs markedly in content from level 1-*Pre-Writing.* Although similar in age to the previous two levels, the children in the group included only two who were mentally defective, while two had perceptual defects. Physical defects were mild to severe and functional ability was at a higher level although a large proportion of unresolved laterality problems was again apparent. Of the three who were unable to progress to a higher level, two were mentally defective, with moderate disability, but one of these suffered from asymbolia; the third had average intelligence, but a severe physical defect plus a space-form dysphasia. The one high (52%) tracing score is difficult to explain; its perpetrator was an eight-year-old athetoid with moderate involvement, borderline intelligence and a personality defect.

With level 3-*Elementary Lettering,* the first stage in independent writing, the tracing scores show a decided shift, extending generally from 43 to 60 per cent, with exceptions at 11, 24 and 26 per cent. The first of these exceptions braced the heel of the hand against the table for writing, forming the letters with the fingers only, a method not producive of success on the larger tracing figures; the second was a ten-year-old athetoid of borderline intelligence, whose ability to letter while receiving a relatively low tracing score was not explained; the third was only five years old at the time of the test, with laterality not yet clearly established, but was able to double his tracing score (and begin cursive writing) a year and a half later when this difficulty had been resolved. One perceptual defect was found and all but two children were able to progress to cursive writing; these two exceptions, thirteen and sixteen years old, comprised the hand-bracer and the mental defective. Almost all these children, more than half of whom were spastic, were achieving independence in self-care; only two had not established handedness.

The 4-*Elementary Cursive* level, including no youngsters below the age of twelve, is the first cerebral palsy level to show an age factor. Tracing scores ranged generally between 52 and 86 per cent with two exceptions, one at 32 per cent, a spastic paraplegic and the only mental defective at that level, and the other at 45 per cent, a child of borderline intelligence with moderately severe impairment. Mean intelligence in this group was high, including the bright normal and superior cerebral palsied youngsters, but three with borderline intelligence were also able to achieve here, as well as one average youngster with perceptual defect. As in the previous category, the three oldest subjects, aged sixteen and seventeen, were unable to progress later. The ten youngsters in this group exhibited generally mild to moderately severe involvement, a high level of physical independence, and no laterality problems. They included one child who was also deaf and one who lacked the fingers of his left hand to complicate a severe right hemiplegia.

5—*Advanced Lettering*: none achieved at this level.

Only 7 per cent of the total cerebral palsied group were able to reach the 6—*Advanced Cursive* level, as compared to 44 per cent of the non-cerebral palsied. All were fifteen or older and had tracing scores above 65 per cent; one showed a tracing score of 100 per cent, a record that was matched by one non-cerebral palsied child with hand involvement and three with no arm disability. Here age and maturity seem to play a larger part, since mental ability was no higher than average and physical impairment was often severe, but of the pyramidal type. Despite this all were independent for self-care except one; this youngstser, suffering from a progressive defect, had retained only the ability to write.

Retests. The relationship of the tracing test scores to writing skill is further brought out by the findings of ten tests on seven children. With intelligence and disability remaining essentially unchanged, their advances in writing skill were accompanied by appropriate increases in tracing test scores, as seen in Table II-E.

TABLE II-E Retests (Tracing Test and Writing Skill)

Subjects	Ages	Writing Skill Levels: 1	2	3	4	5	6
1. E.C.	8 to 11	17	28%*				
2. M.F.	6 to 9		37	67%			
3. K.C.	9 to 10		28	67%*			
4. L.K.	9 to 10		32	45%*			
5. C.C.	10 to 16		39		52%		
6. S.W.	5 to 7			26	52%*		
7. H.H.	9 to 12			45	47%**		

*Initially uncertain laterality; consolidation resulted in improvement in writing skill.
**Pencil held in both hands braced together for writing; used hands separately for tracing.

It is further of interest to note that, with the exception of level 0-*Unable* from which no child was able to progress, those who were subsequently unable to move to the next highest level tended to cluster around the upper limits of their age range; i.e. no child over twelve who was not already lettering, learned to letter independently at a later age and no child over fifteen who was not using cursive writing learned this method later or progressed to its advanced level.

It has already been noted that no cerebral palsied youngsters with extrapyramidal lesions (athetosis, ataxia, or mixed) were able to achieve above the elementary cursive level (4-*Elementary Cursive*). It may be well to explore briefly how the four major diagnostic categories related to the writing and tracing data.

DISCUSSION

From the data presented it may be inferred that the Tracing Test is not useful in measuring writing skill in children handicapped by physical disabilities other than cerebral palsy. Writing skill in these children appears to be primarily a function of age and school experience; degree of disability, limited intelligence, perceptual defects, emotional disturbances and immaturity seem to influence it only if they are extreme. Tracing test scores seem to reflect writing ability and degree of disability only in a very general way, and will not serve as an index of actual or potential writing skill in these youngsters.

This was not the case in the cerebral palsied youngsters, where every factor contributed to writing ability, age as much as intelligence and associated defects. However, tracing skill was the only one that gave a clear-cut pattern at every level of writing skill and yielded a fairly definite differential point between ability to master writing and the lack of this ability—the 40 per cent (9") level of tracing test scores. It is felt, therefore, that the Tracing Test of the Illinois Laterality Battery may be considered for adoption into the armamentarium of standard procedures for the evaluation of cerebral palsied children in occupational therapy.

Its use, it is emphasized, must be limited to that of an aid in the diagnosis of handwriting problems, along with consideration of the several other factors that make up the writing complex. Among these—age, intelligence, perception, maturity and experience—it seems to represent a measure of physical readiness for handwriting. In many instances not enough is known about the cerebral palsied child, but this additional facet of information, by eliminating one more unknown, may together with all the other data help to clarify the source of the difficulty. Some examples from our experience may be cited:

1. A ten-year-old boy of average intelligence, who feeds himself and reads well, cannot write. He can color designated areas when required to do so and can type (hunt and peck method). Information in two vital areas is lacking: (a) extent of disability in arm function, (b) the presence or absence of perceptual defect. When presented with the Tracing Test he produced a series of aimless vertical lines; score: 0. However, when consecutive numbers were placed around the figures he could form them without difficulty, although he was now "following the

TABLE III Diagnosis and Writing Ability

Diagnosis	% of Total Group	Writing Skill Levels			Tracing 40%		Stopped*	Spec. Meth. **	Intelligence			Visual-Percep. Defect	Laterality Defect
		0-2	3	4-6	under	over			I-II	III	V-VI		
Spastic	40%	36%	24%	40%	45%	55%	27%	0	36%	54%	10%	23%	18%
Athetoid	42%	76%	15%	9%	75%	25%	54%	13%	38%	54%	8%	17%	29%
Mixed	14%	75%	0	25%	85%	15%	71%	14%	43%	43%	14%	43%	0
Ataxic	4%	100%	0	0	100%	0	100%	0	100%	0	0	50%	100%
All C.P.	100%	62%	27%	11%	65%	35%	50%	10%	42%	54%	4%	22%	25%
Non-C.P.	100%	15%	25%	60%	0	100%	5%	2%	8%	76%	18%	2%	8%

*Stopped: Unable to progress to a higher level.
** Special Method: Device or hand bracing used for writing and tracing.

dots," not the given lines of the figures. Interpretation: the physical ability to write was intact. The defect was in perception, not that involving symbols which were readily understood, but a serious defect in the perception of space and form.

2. A nine-year-old moderately severe athetoid could not feed himself, had fair speech and borderline intelligence, but was very anxious to learn to write. He was found to be at writing level 1—*Pre-Writing,* achieving a tracing test score of 2.5" (11%). He was given intensive and conscientious pre-writing training in occupational therapy. Re-testing after one year gave the following result: writing level 1—*Pre-Writing;* tracing score: 2.5". Interpretation: the extent of physical disability plus low mental capacity, despite good application and drive, precluded progress to a practical level in writing.

3. A fifteen-year-old tension athetoid who fed herself, walked with a walker and had dull-normal intelligence, had been told she should be using cursive writing. She produced a somewhat laborious but legible elementary lettering. The tracing test resulted in a score of 8" (35%) and revealed that she braced her hand for even this degree of control, thereby losing fluency. Interpretation: this girl rated low on the Tracing Test because she could not form the large figures and at the same time maintain maximum control by bracing her hand. She would have to abandon the method that made it possible for her to letter, in the attempt to obtain the fluency and continuity requisite for cursive writing. In view of this and her age, cursive writing was not encouraged.

4. An eight-year-old spastic boy with minimal involvement in the arms was found earlier to be undergoing a spontaneous handedness transfer to the slightly superior left hand. Intelligence was average, but there was evidence (persistent reversals) of some visual-perceptual defect, as well as diffidence in school because he was unable to write more than his name, and this poorly. The Tracing Test score on admission was 6" (26%). Test score one year later, when the transfer to the left hand was fairly well consolidated and referral for writing training was made: 13" (56%). Interpretation: with the exception of the perceptual defect, this child seemed to have attained the physical level at which independent writing was feasible. With everything else in good condition it was felt that the perceptual defect could be overcome. This was borne out by subsequent experience: after a year of writing training he had advanced to level 3—*Elementary Lettering* with a tracing test score of 15.5" (67%), and he was eventually able to master cursive script.

5. A fifteen-year-old boy who suffered a right hemiplegia plus aphasia as the result of an accident at the age of twelve, has learned to write again with his left hand. Although this hand was also impaired by loss of all digits except the first phalanx of the index finger and the thumb, he was able to achieve a tracing test score of 86 per cent and had progressed steadily from elementary lettering to advanced cursive script. In the meantime the right hand had shown gradual improvement in power and mobility, but astereognosis and a lack of position sense persisted. At the age of thirteen he could not man-

age a pencil with this hand; a year later he could not write, but could obtain a tracing score of 2½" (11%). At the age of fifteen his tracing score had advanced to 4½" (20%) and he spontaneously wrote his first name in awkward block letters 2 to 3" high. Six months later the increased improvement and use of his right hand prompted the question of returning to it for major functions such as writing. Tracing score was 7½" (32%). Since this was still below the 40 per cent level, and far below the level of the other hand, and since proprioception has remained defective, emphasis on such a program was held impractical.

The examples cited above serve to point out that, although we have expressed confidence in the Tracing Test as an instrument of evaluation, we have not attempted nor do we propose to apply it as an exact measure or as a hard-and-fast rule. We are dealing with human nature, with children, and with cerebral palsy, all three constituting complex dynamic entities that defy test-tube analysis and scientifically controlled alteration. Although we are constantly striving to find more objective and reliable methods of evaluation for both our patients and our procedures, we must also remain aware of the limitations imposed by our subjects, and not become discouraged because they cause us to fall short of the precision possible in some other scientific fields. We can never hope to set rigid standards of performance or exact templates for therapy, especially in children with cerebral palsy; we can hope only to develop measures by means of which each individual can make clear to us where his problems lie and what direction to take toward their solution. It is hoped that the Tracing Test, by allowing comparison of performance, may serve as such a measure in the solution of handwriting problems.

SUMMARY

Several criteria, including age, intelligence, extent of disability and presence of visual-perceptual defects, as well as a performance test, "Tracing," were compared with handwriting ability in 114 physically handicapped children.

In the children with handicaps other than cerebral palsy, numbering 59, it was found that age and school experience seemed to be the decisive criteria, the other factors showing an influence only if they were extreme.

In children handicapped by cerebral palsy, numbering 55, most of the criteria showed meaningful differences only with those children (38%) who had already achieved independent writing. The Tracing Test of the Illinois Laterality Battery, which was applied in an effort to gauge the effect of disability by measuring performance, yielded meaningful differences at every level and revealed a critical point dividing the writers from the non-writers: the 40 per cent level of test scores. It was further found that low intelligence, associated central visual-perceptual defect, physical disability of the extrapyramidal type and retarded maturation seemed to be the greatest deterrents to the development of independent writing.

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40TH ANNUAL CONFERENCE

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THE ROLE OF AN INITIAL INTERVIEW IN INTEGRATING THE REHABILITATION SERVICES OF A NEUROPSYCHIATRIC HOSPITAL

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The physical medicine rehabilitation service of the Veterans Administration Neuropsychiatric Hospital, Los Angeles, has established an experimental program whereby each patient entering the hospital is interviewed by an occupational therapist on the admissions ward of the hospital.

This is an experiment to better integrate the large and diversified rehabilitation program, and assure that each patient is placed in the therapeutic situation which will best meet his specific needs.

The aim of this paper is to investigate the form which this interview has taken, some of the mechanics involved, its effectiveness in solving the problem of integration and particularly the philosophy of rehabilitation which would deem such an experiment necessary and important.

In order to understand the nature of the interview it is necessary to examine the entire rehabilitation program, its character and organization. Each clinic is a specific therapeutic situation and is evaluated according to the patient's level of adjustment and is graded in relation to the other clinics in the program. There is conscious effort made to establish a specific psychological climate by controlling the elements that make up this climate.

The therapist himself is the most important factor. He creates by his attitude and behavior an environment which can range from the permissive to the very structured. By being conscious of his attitudes it is possible to effectively control the environment of the clinic. The character of the group is also a determinant, especially the degree of group feeling present. In the well integrated group the therapist can rely on group pressures to keep the patient's behavior up to socially accepted standards, allowing the therapist to take a less authoritarian role in the clinic. With a loosely organized group, that has contact at short intervals and has only its common work as a binding force, the therapist will have to play a stronger role in controlling the group interaction. The type of media used, though less important than the other factors, contributes to the environment, specifically the sexual-role significance of the work, its complexity, and the degree of demand for a cooperative group adjustment and the opportunity for individual ego satisfaction.

These basic elements: the therapist, the group, and the media in interaction create the climate of the clinic. Each clinic attempts to maintain a specific character in order to keep a balanced and diversified program. Effective screening of the patient is imperative to find the place within the program which will be most therapeutic for him specifically.

The initial interview aims at proper original placement of the patient, but each therapist must constantly re-evaluate the patient's program to meet his changing needs. Placement according to the appropriate stage of development requires very alert observation of the patient's behavior in order not to threaten him with a new situation before he is ready, or to encourage dependency patterns after the patient is able to assume responsibility. As a general criterion the patient should be considered for upgrading when his social behavior and general level of adjustment exceeds the average of the group with which he participates. In order to make recommendations to the doctor as to the area that would provide the best treatment for the individual patient, it is important for each therapist to have a view of the entire rehabilitation program and have an intimate knowledge of the character of each component clinic.

The pre-industrial areas represent the last step in this graded program where the patient can attempt an adjustment under the pressure of a highly realistic situation with the guidance and assistance of the therapist. This final stage runs parallel to the reinterest in the community being developed through planning with the doctor and vocational counselor and relies on cooperation between departments for the successful rehabilitation of the patient.

The initial interview itself evaluates the patient according to the therapeutic goals possible in rehabilitation. In order to do this an impression of the patient as a whole must be gained. Free communication between the therapist and patient is important and necessary for this total picture. The actual facts learned are secondary to the attitudes and feelings the patient reveals. With data as a secondary aim the formal question and answer interview is inadequate, thus a

non-directive technique was selected. By its nature this approach fosters the transfer of a great volume of material, much of which is unrelated and the therapist must evaluate it as it specifically applies to rehabilitation.

The patient is interviewed on the ward, slightly apart in the presence of other patients. This is done to discourage the patient's desire to form a relationship such as he has with the doctor conducting psychotherapy.

The patient's contact with the adjunctive therapies will be in a group situation in the future and the therapist's interest in his individual problems will be in relation to the patient's difficulties in adjusting within a group. The patient should be aware that the information he gives about himself is evaluated in relationship to his adjustment to reality and is not of the same character as the basic drives dealt with in psychotherapy. Under these circumstances each patient according to his own inhibitions will bring out a varying amount of personal information. When the patient chooses to discuss his emotional problems, the therapist takes a passive role as listener, and makes no attempt to counsel. The material that seems important is recorded and it can be valuable to the doctor's total picture of the patient since many patients talk more freely in a less officially medical situation.

The actual data gathered in the interview, which takes from fifteen to thirty minutes, concerns the patient's family relationships, education, special training, work history, his vocational and avocational interests, and his future plans. These main areas are introduced by the therapist and the patient discusses them briefly or at length according to their importance to him personally. Allowing the patient to establish the degree of exploration in each topic, the therapist can recognize which areas have emotional significance. This is possible even in the hostile patient whose interview could be termed unsuccessful in the sense that free flow of information is not present.

The patient reveals his attitude toward himself, the therapist, and the idea presented in observable behavior. From this behavior the therapist attempts to evaluate the patient's needs on the level accessible to treatment by the adjunctive therapies. Deep-seated psychological needs will obviously have to be determined by the psychiatrist, but there remain behavioral criteria which the therapist can recognize and evaluate. On the basis of this as well as the patient's background and interest, the therapist makes a recommendation to the doctor for the clinic whose specific climate would be most advantageous. A patient who appears timid and insecure will thus be sent to an undemanding environment where the therapist can give him the support he seeks, just as a patient with a strongly masculine oriented personality must be put in an area where the milieu is compatible with his ideas of the male role. Again, the validity of the recommendations depends on an intimate knowledge of the whole program which the individual doctors, due to lack of time, cannot have.

As well as recommending placement, the therapist adds the attitude assumed while dealing with the patient and its results. The choice of an attitude is forced on the therapist since this first contact is without the benefit of the doctor's prescription. It is important that the therapist be aware of the attitude he is expressing in order to understand the ensuing interaction between himself and the patient. Only when a therapist becomes conscious of himself and his attitudes as therapeutic tools will he be able to effectively control a situation and make it truly therapeutic. The doctor either affirms or changes the decision or attitude, and consistent handling is assured in the future.

Along the same line of thinking any ideas on how to proceed with the rehabilitation are noted. If the patient appears to respond to responsibility a suggestion to foster this is made; or a limited job with very little possibility of failure is recommended for a patient who apparently fears failure and has never persevered beyond the initial stage of any activity in the past.

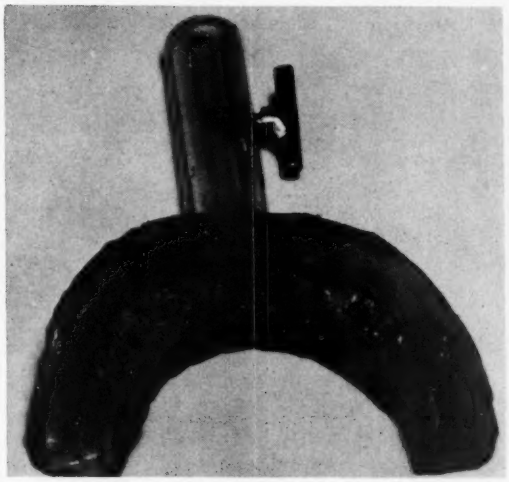
These suggestions form the basis for a tentative treatment plan which reflects and influences the patient contact with the prescribed adjunctive therapy. Such an individually written treatment plan with stated attitude and tentative goals assures that the patient's contact with the rehabilitation service is therapeutic. It is the therapist's responsibility to keep this plan current and advise the doctor on the basis of observed behavior as to the patient's changing needs.

The written report of the interview has taken a free narrative form in keeping with the development of the interview itself. A standard form was considered but the diversified material defied standardization. The whole intent of the interview is to gain an impression of the patient as a whole with emphasis on his individuality rather than his diagnosis or any other classification. Like a sketch it draws the face the patient shows to the world of reality, his observable behavior patterns, defenses and personality make-up. It cannot hope to recognize the inner man, his dynamics and motivations as seen by the psychiatrist. In the work of the adjunctive therapist, material thus geared to the practical hand-

(Continued on page 88)

LIQUID LATEX MOUTHPIECE

SAMUEL L. THORPE, D.S.C.*
RICHARD F. WELLS, O.T.R.†



Liquid Latex Mouthpiece

Increasing awareness of the need to provide our growing quadriplegic and cerebral palsied population with a suitable device which would enable them greater participation in a prevocational activity, led to a search of available literature. Little information was discovered on an appliance which would enable a patient to utilize head movement as a partial substitute for hand function. One such suggested device, which seemed to meet our needs, was selected for trial and the necessary materials were purchased. Several mouthpieces were made, but proved to lack what we considered to be desirable features. The investigation was broadened to include the testing of all types of products, ranging from self-curing resins to thin sheets of synthetic shoe sole. Each in turn was rejected as having some undesirable feature, such as excessive time demands on the patient during fitting or fabrication, potential danger from heat, fatigue factor in use, excessive repairs, objectionable taste, inability of the patient to converse with the mouthpiece in place, possible harmful effect on the dentition and inability to control salivation.

The hard mouthpieces that encompass the cuspid to cuspid area tend to cause malocclusion if used over a long period of time. As this type of device is held in place by both the upper and lower anterior teeth, this tends to cause early fatigue in use and makes control of salivation and swallowing difficult. It was felt that a softer appliance would give greater comfort and ease of use for severely involved quadriparetic patients.

After careful evaluation, the following minimal

Latex applied to cast with brush

requirements of an acceptable device were determined:

1. Facility in control of salivation and swallowing
2. Facility in conversation with mouthpiece in position
3. Breakage, practically non-existent
4. Rest position of mandible during use
5. Elimination of lateral motion by contact with the entire lower dentition
6. Unobjectionable color and taste
7. Sanitary
8. Inexpensive
9. Easily fabricated
10. Adaptable to two or more uses

The impression is taken with a regular dental stock tray. However, for more accuracy, a preliminary impression can be taken with a stock tray, from which a cast is made. Then a double thickness base plate is adapted to the cast for individualized trays. The impression material used can be any of the alginate compounds.[1] A mixture of two units of powder to two units of water is used for the lower impression. The water and powder are spatulated, mixed vigorously for one minute, placed in tray, then taken to the patient's mouth and set.

The tray is left in place for three minutes and removed with a snap. The alginate impression is rinsed with cold water to remove saliva. It is then boxed up with wax and the cast poured immediately with Duroc.[2] Duroc is recommended because its hardness permits easy manipulation of the latex rubber. Inasmuch as the impressions

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†Supervisor, adapted equipment section of the occupational therapy department, Highland View Hospital, Cleveland, Ohio.

Separation of the mouthpiece from the cast.

may be taken with a patient in the supine position, certain precautionary measures should be taken for the comfort and safety of the patient. The impression tray should be one that fits well and should be free from nicks or sharp edges about the flanges. The impression compound should be a relatively thick mix so that the excess will not drain down into the oral pharynx.

When the cast has set, a form of boxing wax is constructed around the plaster mold. The cast is moistened thoroughly with water and allowed to stand for about one hour. The latex is then

Plastic tube is adjoined with latex.

applied with a small water color brush to insure an accurate base coat, which is necessary for an exact fit. Three coats are applied in this manner, with a twenty minute interval between coats. After the third application has dried, the latex may be poured into the mold in one-eighth inch layers, allowing two hours drying time for each layer until the mold is full. The cast is allowed to stand for twenty-four hours at room temperature before the boxing wax is removed. If any opaque white areas are present at this time, further curing is necessary. When the entire mouthpiece is amber colored, it is removed from the plaster cast and trimmed with a pair of sharp scissors.

The base or art work, is not trimmed; only the detail of the teeth is cleaned, if necessary. Boxing wax is easily cut and worked to one-sixteenth of an inch above the highest point of the teeth, following the angle of fall closely. The wax is seared to the art work, with not more than one-eighth of an inch of space between the wax and the teeth, inside and out.

A piece of clear plastic tube, one-fourth inch in diameter is cut four inches long, and one end is

Comparison of artist's latest work with his first attempt, two weeks earlier.

split up approximately one and one-quarter inches. The split end of the tube is softened with heat and shaped to the contour of the center of the mouthpiece. The plastic is allowed to cool and set; then a hole is drilled and tapped near the center of the tube and the thumb screw inserted. Next, the shaped end of the tube is held lightly in place against the mouthpiece and sufficient latex is applied to hold it securely.

Page-turning and painting implements are held securely by inserting them into the tube and tightening the thumb screw. A pencil may be placed parallel to the tube and held securely to it with a spring type paper clip or other similar device.

Cost and type of material:

1. Dental plaster 19c per pound
2. Dermoid 2.25 per quart
3. Alginate impression compound
4. Plastic tube, one-quarter inch (inside diameter), 10c per foot
5. Thumb screw 1/8" 40 2c each
6. Plug tap[3] 5-40 N.C. 25, 31c each
7. Tap wrench, $1.00 each
8. Boxing wax,[4] $1.25 per pound
9. Small mixing bowl, 35c each
10. Small water color brush, 15c each

Conclusion: The advantages of a latex rubber mouthpiece lie in the comfort and ease of fabrication, the short time demands which are made on the patient, and the ease of obtaining tools and material. Displacement of the mouthpiece during use is unlikely as it is not held in place by muscle action alone.

REFERENCES

1. Caulk's Jeltrate was used.
2. Duroc — a green colored dental stone of excellent quality.
3. Items 6-9 may be used many times without replacements.
4. Purchased from any dental supply house.

HEAD-BAND PAGE TURNER

SISTER MARY LAURETANA, O.T.R.*
DORIS LIEPMANN, O.T.R.*

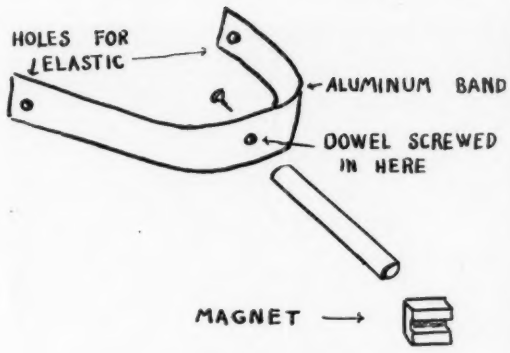
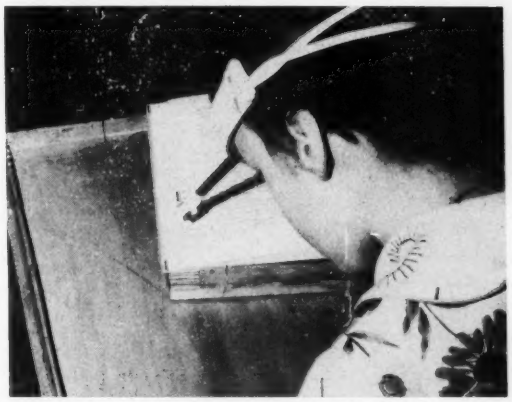


Diagram of Page Turner



View of Page Turner in Use

Page turning is a fine skill utilizing coordination of shoulder and elbow, and opposition of thumb and forefinger. As the cerebral palsied child has motor difficulty because of involuntary motion, spasticity, or lack of fine finger opposition, page turning is often a problem to him. The page turner we devised is easy to set up and inexpensive to construct.

The idea for the page turner came from an eleven year old athetoid girl who has considerable involvement in the upper extremities. She is a bright child, and being unable to write or speak so as to be understood by everyone, she read extensively but always with someone beside her to turn the pages. Her therapist had experimented with various opponens splints and other procedures to facilitate page turning, all of which met with little success. Holding an appliance in her mouth could not be considered because there was not enough jaw or lip control to permit this. Then came the suggestion from the child, "Why don't you make me a piece of plastic shaped like a 'U' and I can wear it around my forehead". This suggestion was the beginning of our present page turner.

The page turner consists of a band two inches wide and twelve inches in length, curved about the forehead, with a six-inch wooden dowel, one-half inch in diameter, projecting from the center of the band. A magnet is secured to the end of the dowel and by turning her head from side to side, the child can magnetize the paper clips or other small strips of metal fastened near the center edge of each page. This contact of the magnet with the metal clip initiates the page turning and the child completes the operation by a right to left motion of the head. Metal clips that we have found very useful are the colored tabs that are used on file cards. The first "U" shaped band that we used was cut from thin plastic but as this proved rather fragile, the next ones were made from thin aluminum in the hospital brace shop. One hole is drilled at each end and a double strip of elastic pulled through the holes. The elastic serves to hold the band on securely. The inner surface of the band can be lined with quarter inch sponge rubber

Side View of Patient Using Page Turner

for greater comfort, and a piece of stockinette sewed around the band, both encloses the sponge rubber and provides friction so that the band stays in place on the forehead. The dowel is secured with a screw and the screw hole must be countersunk to make the screw level with the inside surface of the band. The magnet can be braised to a screw head which then screws into the dowel.

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*Occupational therapy department, Joseph P. Kennedy Jr. Memorial Hospital, Brighton, Mass.

AN EFFECTIVE FOAM RUBBER HANDLE ADAPTER

MARYELLE DODDS, CAPT., AMSC (O.T.) M.A.
JOANN H. SWANSON

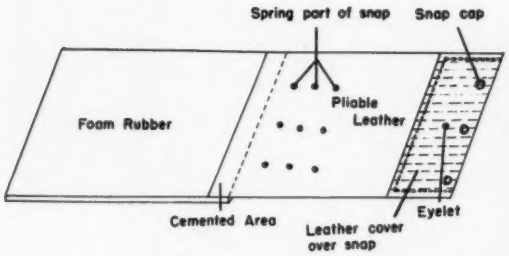


Figure 1

INTRODUCTION

Built-up handles on tools and equipment to improve grasp constitute an essential part of occupational therapy equipment for the treatment of patients with physical disabilities. These handles have been made in a number of ways. They have been shaped from wood, molded from dental wax, and fashioned from foam rubber.

The latter method has several advantages over the other two methods. The spongy quality of the rubber actually promotes grasp. Hand someone a tool with this spongy handle and he will squeeze it several times. Another advantage of the foam rubber is that it is quickly and easily fixed to a handle. Because of the adaptability of the rubber, it is not usually necessary to shape

Figure 2

each handle to the individual patient's hand as it tends to shape itself. The softness of foam rubber greatly lessens the danger of blisters forming on denervated skin or skin softened by disuse.

There remain, however, several disadvantages, even in the foam rubber as commonly used. It is rather expensive. A square foot of the material one half inch thick, retails for about fifty cents and is sufficient for only two or three handles. Added to this is the price of the masking tape or adhesive tape with which the material is fastened. Rarely can one handle be used for more than one patient because the rubber wears and becomes shabby. It is not usually worth saving, either from a functional or an aesthetic standpoint. The price per handle increases if the experimental method of determin-

FABRICATION OF HANDLE ADAPTERS

Figure 3. A graded set of adjustable foam rubber handle adapters. They can be hung in a cupboard or on a door for easy storage. The number on each adapter indicates the length of the foam rubber.

Figure 4. Handle adapters can be used to build up both the handle and the point of a file to any diameter.

Figure 5. These handle adapters are neat in appearance and can be used to increase the diameter of handles on tools and equipment. A shows how the adapter is used on the handle of the beater of the loom, and B on the castle top.

ing the correct size is employed, as there may be a considerable amount of waste. The price becomes almost prohibitive if more than one patient is using one piece of equipment, for it then becomes necessary to change the adaptation several times each day. Taping foam rubber handles is time consuming, and in a busy clinic is undesirable especially if the therapist encounters some difficulty in getting just the right amount of rubber for the size of the handle required.

The appearance of taped handles tends to give the equipment or tool a frayed appearance, particularly when the foam rubber begins to wear, or the tape no longer adheres well.

ADVANTAGES OF HANDLE ADAPTER

The above problems have been solved with the use of a graded set of adjustable foam rubber handles. These handles will fit onto all types of equipment from the castle top of a floor or table loom, (Figure 5) to the point or handle of a file, (Figure 4). Briefly, the foam rubber is glued to a piece of pliable leather (Figure 1), then both the rubber and the leather are wrapped around the tool handle. The leather covers the rubber and is snapped onto itself. (Figure 2).

These handle adapters decrease the expense of constant replacement for the same foam rubber can be changed from one tool or piece of eyuipment to another and still remain in good condition. The leather covering protects the foam rubber from becoming worn and shabby looking. Finding the right size of handle now becomes quick, easy and inexpensive. Instead of cutting a piece of foam rubber to an estimated size and taping it onto a handle each time, a ready made adapter is just snapped into place.

The adapters are easily stored. They can be hung in a cupboard or on a door or wall so they take much less space in a clinic than does a set of the conventional tool handles of wood. (Figure 3.) They are not only time, space and money savers but are also quite easy to make, using materials found in most occupational therapy clinics.

Both the leather and the rubber can be of any workable width. Four or five inches has been found quite comfortable for the average adult patient. The leather and the foam rubber are of equal length. The length is graded in two inch steps from four to fourteen inches. The rubber and leather are overlapped about one and one-half inches and then glued together with a special cement for foam rubber. Three snap caps are set into the leather at the edge farthest from the foam rubber. The lower or spring part of the snaps are set into the leather, within one-half inch of where the rubber is cemented. Two or three sets of the spring part of the snaps are set approximately an inch apart to provide for adjustment within each handle. If the roughness of the snaps and eyelet irritate the skin, a leather guard may be stitched in place over the caps as shown in Figure 1.

An eyelet placed just below the center snap is a convenient addition to provide for hanging the handle adapter.

The final step is to indicate the size on each handle adapter. It is not possible to determine the diameter of the handle which the adapter will form because the size of the core on which it is wrapped has a bearing on the total size of the handle. It is suggested that the length of the foam rubber be used to designate the size of each adapter, as, a No. 4 on the four inch adapter. At least two of these handle adapters of each size should be made to allow for bilateral work or two patients needing the same size of handle at one time.

SUMMARY

A graded set of adjustable foam rubber handle adapters is easy to make of materials found in most occupational therapy clinics and require little storage space. They overcome the disadvantages of the taped on handles in the following ways:

1. Expenses are minimized since handle adapters can be used by many patients on a number of tools or pieces of equipment.
2. With graded snap-on adapters the right size is quickly found and easily snapped into place.
3. Handle adapters can be changed frequently without undue wear to the foam rubber.
4. The leather covering prevents wear of the foam rubber and presents a neat appearance.

This issue is published in two sections and Part II is compiled as a buyers' guide. It lists suppliers of occupational therapy equipment and media supplies. For the convenience of our readers, the Journal advertisers are listed in bold face type for ready reference. Support these companies as they have evidenced their desire to serve you by introducing you to their products during the past year in the advertising sections of the *American Journal of Occupational Therapy.*

The *Buyers' Guide* should prove a ready reference and if you wish more information included, please write the editorial office of the *Journal.* Comments and criticisms will be greatly appreciated as well as your continued support of *Journal* advertisers.

NATIONALLY SPEAKING

Report on National Institute of Mental Health Project

The psychiatric project which has been conducted by the AOTA under a grant from the National Institute of Mental Health culminated in a workshop conference Nov. 13-19 at the Allenberry Inn, Pennsylvania.

This conference, "The Psychiatric Occupational Therapist: Function and Preparation," was the final step in an eighteen month study project which had as its immediate goal the examination, assessment and definition of current concepts and practices of occupational therapy in psychiatry in order that educational goals might be refined and ways and means developed for improving the preparation of future occupational therapists.

It was recognized that any study or re-evaluation of our educational process would be unrealistic without first assessing the occupational therapy concepts and practices on which this education is based. In addition, the many developments and changing concepts in psychiatry within recent years indicated the necessity for occupational therapy to reassess its role in the total treatment program for the mentally ill as well as review the current preparation of therapists to fulfill this role.

It was the hope that such a study would aid in focusing on concepts and needs which would guide our educational practices and that such knowledge would be reflected in the greater ability of future occupational therapists to (1) be better equipped to assist the patient in achieving specific therapeutic goals, (2) participate more effectively in the rehabilitation program, (3) acquire greater skill in observation, evaluation and communication and (4) contribute to and better utilize the milieu of the hospital.

With these purposes in mind, seven topics were selected for study and investigation by ten preparatory commissions over a ten month period. These topics were:

1. Specific treatment techniques and procedures: A definition and description of individual treatment procedures in occupational therapy.
2. Correlation and integration of the occupational therapy department in the hospital community.
3. Group techniques in treatment and teaching.
4. Therapeutic activities: recreation, music, art, prevocational rehabilitation, hospital industry.
5. The role of occupational therapy in bridging the gap between the hospital and community.
6. Interdisciplinary communication.
7. Occupational therapy as a means of providing diagnostic data and personality evaluation.

Preparatory commissions were organized in areas of close proximity to schools of occupational therapy so that as many school persons could be involved as possible, and that each group could have a proportionate representation of both the school and clinical areas. Commission chairmen selected the particular topic which they felt their group was best prepared to study and evaluate. Such selections were based on the interest and experience of persons in the area as well as the unique contribution that could be made by allied groups.

Each commission consisted of approximately ten members, the majority of these occupational therapists, but including those other professions most closely associated with the topic being studied. Techniques of investigation varied with each group and included the use of questionnaires, survey of literature, and frequent meetings to assess and evaluate the material being gathered. The completed reports were mimeographed and distributed to all persons participating in a preparatory commission. These reports were a most valuable contribution as background material for the conference and as a survey of existing practices and concepts in the area of psychiatric occupational therapy.

In planning the conference program it was felt that the workshop sessions should encompass the material prepared by the preparatory commissions and at the same time give an opportunity to look at these topics in terms of their inter-relationships. It was therefore determined that the conference would deal with four basic topics or problems: (1) to define and evaluate the use of certain techniques and procedures in a treatment or activity program (the self, the group, and activities in rehabilitation, diagnosis, and milieu), (2) to define and delineate the specific contribution of occupational therapy with reference to supportive milieu, psychotherapy, evaluation, and rehabilitation, (3) to determine the extent to which certain techniques and modalities should be a responsibility of occupational therapy and the extent to which the therapist is prepared to assume these responsibilities, and (4) to consider what changes are indicated in the academic and clinical preparation of the psychiatric occupational therapist.

In addition to receiving the preparatory commission reports for study, each participant received in advance of the conference a list of

questions prepared on the basis of the commission reports for the purpose of bringing into focus some of the major issues within each workshop topic. A "Definition of Concepts" was also prepared for each participant. This material consisted of definitions of certain concepts and terms frequently used in the commission reports and which would be further used by participants at the conference. They were prepared in an attempt to provide a common basis of understanding and foci for thinking.

Attendance at the conference was contingent upon active participation in a preparatory commission. Sixty-one persons participated in the conference and all participants were assigned to a workshop group except the coordinator. Membership of these groups remained constant throughout the conference. Each group consisted of: four clinical occupational therapists, three occupational therapy school representatives, one psychiatrist and two representatives from allied professions. The allied disciplines participating were: social group work, social case work, clinical psychology, social anthropology, vocational rehabilitation, recreation, hospital industry, music and art.

Group discussions were followed by plenary sessions at which time each group presented a resume of their thinking for general discussion. Reports from one small group were reproduced after each workshop session and distributed to all participants for study prior to the general session.

It is never possible to convey in a report of this nature the significant feelings and thinking which make a conference of this type a success.. Those who have shared in this experience have indicated that it was a most meaningful and productive experience. One of the most outstanding accomplishments was the free communication between occupational therapists and the allied professional persons. The feeling of unanimity of purpose, interest and motivation achieved by the total group made it possible to deal with problems with a remarkable lack of professional defensiveness, and to consider these problems first on the basis of the welfare of the patient and second in terms of their implication for a given discipline. We feel this conference provided a unique experience of a working interdisciplinary group whose primary concern was for patient care and treatment.

Two specific recommendations were drafted on the final day of the conference and these dealt wth a request for an additional grant to continue some aspects of this project, and a request that the AOTA take steps to bring together related disciplines for the purpose of discussing a "core curriculum."

The conference proceedings are now in the hands of the project editor and it is anticipated that publication will be completed sometime in 1957.

While we recognize that much work and further thinking needs to be done in relation to many of the issues raised during the conference, we feel that from this experience has come a clearer conceptualization of our role in psychiatry and our limitations, and that there has developed a solid base from which we can move toward the development of improved educational programs.

PROGRAM
FOR
WORKSHOP CONFERENCE

"New Frontiers in Psychiatry"—Banquet and Keynote Address
Robert A. Matthews, M.D., Pennsylvania Commissioner of Mental Health

"Techniques and Procedures Used in the Treatment and Activity Program for Psychiatric Patients"
Elvin V. Semrad, M.D., Chief Medical Officer, Massachusetts Mental Health Center, Boston, Mass.
Max Day, M.D., Clinical Director, Boston State Hospital, Boston, Mass.

Topic 1: *What characterizes the following techniques and procedures used by various disciplines in the treatment and activity programs for psychiatric patients?*

a. Self as a therapeutic tool
b. Group techniques
c. Activities in bridging the gap between hospital and community living
d. Activities in attaining specific treatment goals
e. Activities in contributing to psychodynamic formulations through personality, social and skill evaluation
f. Activities in creating a therapeutic milieu in the hospital

The discussion of this topic was concerned with (1) definition, reassessment and evaluation of the use of these techniques and procedures in a treatment or activity program regardless of professional boundaries, (2) consideration as to how these techniques and procedures are used, their potential as well as their limitations in any setting, (3) consideration of the extent to which the success in the use of any of these is dependent upon the correlation or integration of services.

Topic II: In the treatment and activity program for the psychiatric patient, what are the definitive contributions of occupational therapy with reference to each of the following?

a. Supportive milieu
b. Supplementing psychotherapy
c. Contributing to evaluation
d. Socio-economic rehabilitation

The focus was specifically on the (1.) function of occupational therapy in terms of the above areas and the contribution occupational therapy is now making, (2) an assessment of where the potential is not being realized and a clarification of some of the reasons for these limitations, (3) a realistic evaluation of what our

(Continued on page 81)

PEOPLE YOU SHOULD KNOW

LAUREL V. NELSON, O.T.R.

A Biographical Sketch
by
SHIRLEY BOWING, O.T.R.

Laurel Nelson, currently a member of the Board of Management and co-chairman of the permanent conference committee and recently chairman of the legislative and civil service committee, has, in the short seven years he has been in occupational therapy, rapidly become an AOTA member that you should know.

Undoubtedly, his 6'5" height, commanding good looks and personal dignity have been an entree to professional recognition. However, more basic qualities in his personality have assured his acceptance as a leader by his fellow therapists and his supervisors.

To one who has had the opportunity to observe him in several situations, the most significant qualities he appears to possess are a sincere interest in people as individuals and a practical optimism about their ability to contribute. These characteristics are evident at group meetings where he actively listens to others' contributions; on hospital visits where he frequently steps aside for friendly conversations with patients; and, particularly, in his office where he attempts to evaluate staff members according to their contribution to patients' welfare without undue consideration of their titles and status.

These personal characteristics are coupled with a broad interest in society's care of the mentally ill and a realization that occupational therapy must be integrated with the total effort. Laurel's appointment as coordinator of adjunctive therapies at Topeka State Hospital, in 1952, and his selection, in 1955, as consultant in rehabilitation therapies for the medical services division of Minnesota's State Department of Public Welfare were appropriate recognition of these attributes.

In his present position in Minnesota, Laurel's duties are to stimulate improvement in quantity and quality of services to patients in occupational, recreational and industrial therapy. This involves substantial consultation with personnel in eight psychiatric hospitals, two hospitals for the mentally retarded and the state's institutions for the tuberculous and for crippled children. His duties further include presentation of recommendations to hospital superintendents and to the medical director of the Department of Welfare.

Although born in South Dakota, Laurel is truly a native of the Pacific Northwest, as his parents, Mr. and Mrs. Elroy Nelson, moved to Shelton, Washington, when he was age three. After graduating from high school in Shelton in 1938, Laurel worked for the Simpson Logging Company as lumber grader and sorter until his entrance to military service in 1942. His army career included stateside infantry and pre-aviation training and officer's training school, following which he was in the Philippine Islands for eighteen months. While overseas he served variously as platoon leader, supply officer, munitions officer and recreation officer. The Purple Heart and Bronze Star were awarded following combat duty on Leyte, Luzon, Mindoro and Mindanao Islands.

Following active military service, Laurel attended the College of Puget Sound in Tacoma, Washington, where he received his Bachelor of Arts degree and Certificate in Occupational Therapy in 1949-1950. Laurel has been prominent in both football and track in his high school days, and his fellow alumni from the College of Puget Sound still speak of him as an outstanding discus thrower on the college track team.

Upon completion of his affiliations in Oregon and Washington training centers, Laurel joined the occupational therapy staff at American Lake Veterans' Hospital near Tacoma, Washington. From 1950, until he accepted the Topeka State Hospital position in 1952, he participated in several areas of the extensive program at American

Lake, including the responsibility as coordinator of industrial therapy.

Laurel's selection of occupational therapy as a career was largely influenced by the results of vocational interest tests, but pencil and paper tests were not the only indicators of the suitability of his choice. His love of the out-of-doors, early interest in woodworking and lapidary, leadership in the Boy Scouts of America and his desire to find a profession where he would work with people seem to follow a common OT pattern.

A summation of Laurel Nelson's assets must include mention of his wife, formerly Lucille V. Franson and also a native of Shelton. Lucille occasionally accompanies Laurel to professional meetings and undoubtedly fools many a casual observer. As attractive and smartly dressed as a professional model, you would not readily guess that she designs and makes many of her clothes, is an excellent and imaginative cook, a "green-thumb" gardener, and has even been known to manipulate a galloping gas-powered lawn mower when Laurel's work takes him away from home for several days.

Laurel and Lucille share an interest in their garden and yard, in photography and an avid interest in reading. Laurel's workshop in the basement of his home at 4402 Hodgson Road in St. Paul, is evidence that he is still a typical OT who likes to work with his hands, even though his abilities have led him into work that is wholly administrative or supervisory.

Workshop Conference . . .

(Continued from page 79)

responsibilities are and how we may develop in order to more fully meet these responsibilities.

Topic III: To what extent should the following techniques and modalities be a responsibility of occupational therapy and to what extent is the occupational therapist prepared to assume these responsibilities?

a. Use of self
b. Group techniques
c. Music and drama
d. Recreation, library and education
e. Creative or structured arts and crafts
f. Industry

The consideration of this topic included (1) the proper function of occupational therapy in regard to these techniques and modalities, (2) the degree to which we are now using them, (3) the extent to which we should increase or delimit our scope or skills with reference to them, (4) an assessment and evaluation of the occupational therapist's capacity to function in these areas, (5) existence of boundaries in occupational therapy, their nature and rationale, (6) how these boundaries may be broken down in order to improve treatment; and (7) the preparation of the occupational therapist to function in regard to the above techniques and modalities as compared to the preparations of other specialists.

Topic IV: What changes are indicated in the academic and clinical preparation of the occupational therapist with reference to each of the following:

a. Use of self
b. Group techniques
c. Activities
d. Communication
e. Current psychiatric developments
f. Integration of educational experience

In view of the discussions which took place during the entire conference, the participants were charged with (1) a realistic evaluation of the functions of occupational therapy and a determination of where changes are indicated in general philosophy of patient treatment, (2) a delineation of where changes are indicated in the academic and clinical preparation of occupational therapy students, (3) a determination of the nature of needed changes and how they may be accomplished, (4) an evaluation of the extent to which further integration may be possible between the didactic and clinical settings, intellectual and emotional experiences, and how personal experiences may be specifically used to increase the student's understanding of psychodynamics and improve his potential skill in treatment techniques and procedures.

Gail S. Fidler, O.T.R.
Coordinator

Page Turner . . .

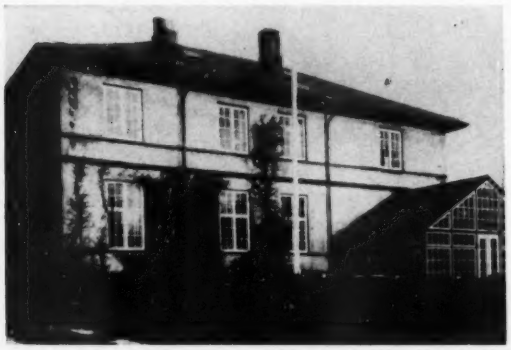
(Continued from page 75)

The page turner was tried on a number of other severely involved children who had not previously been able to turn pages, and its success was encouraging. Several of the page turners were made with rubber tips at the end instead of the magnet. The rubber tip, held against the page, provided enough pressure to turn it, and proved successful with a number of the children who had more head and neck control.

To hold the book at the proper angle, any of the many conventional book racks may be used. The stand that we have used is merely two pieces of wood nailed together with the bottom piece beveled to make the back fit at an angle, and it has a strip of wood nailed to the front edge in order to prevent the book from sliding down. The child sits at an elbow height table with the book rack in the center before her. Some children find it a bit easier to use the turner when the book is placed more to the right or to the left. The turner and rack have also been used in the standing table.

We hope that this article may be of help to you, especially to those of you who are working with the severely handicapped cerebral palsied child, and we would be interested in hearing whether it succeeds with your patients, as well as to receive any new ideas you may have about it.

FEATURED O.T. DEPARTMENTS



THE DANISH SCHOOL FOR OCCUPATIONAL THERAPISTS

Elisabeth Sturup

The first course in Denmark for occupational therapists started January 1, 1935, as a section of an old handicraft association, *Dansk Kustflidsforening*. The director of this association, Mrs. Agnete Warming, had among her friends a young spastic girl. It was through efforts to find suitable occupation for this student that Mrs. Warming became aware of occupational therapy in the United States from correspondence with the late Mrs. Emmy Sommer, who was Danish born, but for many years worked in Walter Reed Military Hospital in Washington, D. C.

At the same time the author of this article, married to a young psychiatrist, trained as a handweaver and after four years work in a weaving shop for blind women, was allowed to give handicraft work to patients in the psychiatric wards in the Municipal Hospital in Copenhagen on a voluntary basis. When I left for a study trip to England another young weaver was placed there in a paid position. In England I visited Dr. Elizabeth Casson's place in Bristol, where an American OT worked with patients and trained students, and I worked three months in the newly established OT center at Maudsley Hospital in London.

When I returned to Copenhagen in the autumn of 1935, Mrs. Warming asked me to join the staff of the Danish course, which I did, and I have worked there until September, 1956, acting as director from March, 1943, when Mrs. Warming retired.

The first courses were very short, and only embroidery and related activities were submitted, and a medical doctor gave a few lectures. But after a few terms the curriculum was enlarged and hospital training for the students was added. Through the next years, lectures and crafts were added when the circumstances made it possible, or on account of advice from one of the working OT's or something in an article or a visit from or to other countries.

From 1943 the training time was two years and included anatomy, pathology, psychology, psychiatry, woodcraft and bookbinding and six months of fulltime hospital work.

The New Workshop

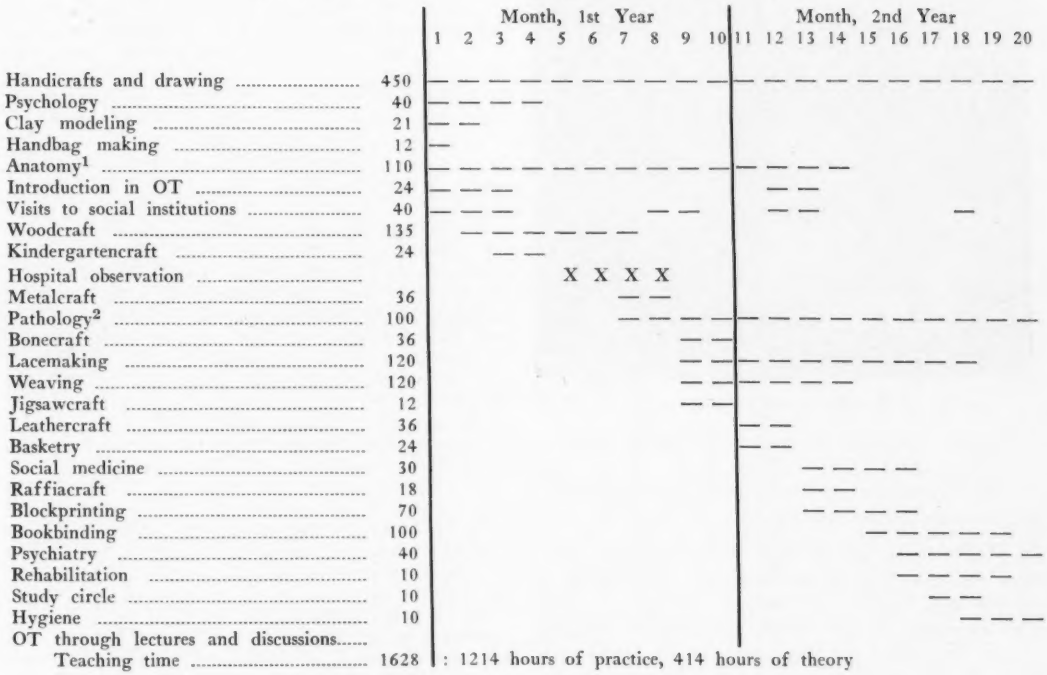
The curriculum now (from 1953) runs through three years and includes many theoretical and practical subjects besides hospital practice and oral and written examinations.

The curriculum is arranged so that the study of theoretical and practical subjects alternate during the week. It is of importance for the students to have time for adaptation of the theoretical subjects during work with other things in the same period. For the practical subjects it is important that the students have time enough to work in the workroom after school hours. During homework and sparetime work, which are criticized and adjudicated by the teachers, the students are impelled to and trained in developing their fantasy and their personal initiative. At the same time they are able to provide themselves with a collection of samplers and models which will be useful for them in their future hospital work. Through study circles and literature summaries the students' interest in finding books and articles related to their work is called upon.

After the first four months at school each student is sent to hospital work as observer every morning for 3-4 hours, 2 months in one place and 2 months in another place. This gives a double advantage as the students at an early state in their training get a view of their

CURRICULUM

(Curriculum for course nr. 23, beginning Sept. 1st 1953)



1. Anatomy incl. kinesiology and physiology
2. Pathology incl. appl. occupational therapy

The third year: 4 months work in psychiatric department or mental hospital
4 months work in a physiotherapy department or orthopedic clinic
2 months work in school

future work field, and the school gets a report from the OT department about the student's adjustability.

The third year of training is spent in full time hospital work under supervision. Each student has to work four months in a psychiatric and four months in a physiotherapeutic/orthopedic department in close agreement with the school, which receives a detailed report from the department-leaders about the student's ability, morale, workpower, etcetera.

After these eight months of hospital work the students come back to school for two months in which a refresher-course in pathology is given, beside lectures and discussions in rehabilitation and occupational therapy, ending with an examination with a case history and a patient present. Further in these two months, there will be training in writing reports, account keeping, lectures and instructions.

All the teachers of the medical subjects are medical doctors. The practical subjects are taught by trained teachers in each special field. Trained occupational therapists with some additional special training are teaching some of the handicrafts and directing the discussions.

Students admitted are women and men, 20-32 years of age. A good school-education is requested and some practical work outside the family home.

Eighteen students are taken into each group and a new group is started each year on the first of September, and every second year an extra group the first of March. In the last eight years there have been plenty of applicants, some times up to four times as many as we are able to take, and it has therefore been possible to make a selection beforehand. It is very seldom a student will not complete the course.

At the beginning, the school was private and the students paid the expenses. From 1951 a state subsidy was obtained which gave the possibilities for new and better rooms and equipment and is a help in keeping down the tuition. From 1954 our students can be granted scholarships on the same line as students in other higher education institutes in this country.

In 1953 the school was authorized as a train-

Teaching in the Garden

ing centre by the Association of Danish Medical Doctors, which gives advice about the training and the appointment of the teaching doctors and controls the examinations.

The school board consists of 12 members, one-third being occupational therapists. The Ministry of Interior, which administrates the state subsidy, has one seat on the board, the Medical Health Board has two and the Association of Danish Medical Doctors one seat. The director of the school is now Miss Ingrid Balslev, O.T.

Letters to the Editor

To the Editor:

It was a pleasure to read the article entitled, "A Partial Field Survey of Psychiatric Occupational Therapy," by Drs. Azima and Wittkower. It revealed, by an actual questionnaire, that the lacks and the direction of future development in Canadian facilities closely resembles those made plain at the Allenberry conference which was arranged jointly by the National Institute of Mental Health and the American Occupational Therapy Association in November, 1956.

The necessity of establishing a core of education and experience which will give a dynamic orientation to the field of occupational therapy becomes clear. The potential therapeutic values for psychiatric patients of the media and relationships available in occupational therapy is only beginning to be appreciated and developed.

As this article indicates, it should be possible to expect a recommendation from the occupational therapists concerning the level and kind of object oriented individual and group activities which will be beneficial to a patient to ameliorate his symptomatic picture, or to aid in a deeper rehabilitation of his personality. It should also be possible to expect that occupational therapy will be considered inadvisable for some patients.

As in the field of psychology, linking concepts are being established between object relationships and normal personality growth, so there is developing an increased appreciation of objects and their symbolic vicissitudes in the therapeutic reconstructive process.

The idea that occupational therapy can be a dynamically oriented and predictable process, conforming to therapeutic criteria necessary in the psychiatric field, will make it possible for it to develop an autonomy and self-respect which will place this professional group as one of the five essential professions on a team, creating a therapeutic design for psychiatric patients. The healing hand will then be complete.

Genevieve M. Stewart, M.D.
Psychiatrist

To the Editor:

I have read with interest the very provocative article "A Partial Field Survey of Psychiatric Occupational Therapy" by H. Azima, M.D., and E. D. Wittkower, M.D. This article has pointed out many points of weakness of psychiatric occupational therapy and I, for one, feel that it is well that some of this devastating material has been presented, whether we like it or not.

It is not the occupational therapist in the field of psychiatry alone that is put on the defensive in facing up to these severe criticisms but it is the profession as a whole, the schools in general and the psychiatric occupational therapists and the psychiatrists in particular.

The basis of what I have to say lies in my previous experience as an occupational therapist in state hospital systems and through observations and discussions of occupational therapy with occupational therapists, psychiatrists and psychologists in various other hospitals (state, county and private) over a period of twenty years.

In my first reading of this article my reactions were rather explosive but after re-reading it many times, the emotional aspects of my reactions diminished. However, there remained certain reactions which I admit still have some emotional coloring and I have come to certain conclusions which might be judged, by others than occupational therapists in the field of psychiatry, as being defensive.

This article is much too long and the topics too numerous to comment on each individually in a "Letter to the Editor," but there are three aspects of this article to which I should like to reply specifically and perhaps defensively.

First: The authors discuss six books and the rationale for occupational therapy for the mentally ill patient expressed therein. In practice, with perhaps the exception of "Introduction to Psychiatric Occupational Therapy" by Fidler and Fidler, these six are considered as literature and not as texts and they do not necessarily "form the background source of its teaching." However we, as a group, the occupational therapists in the psychiatric field, must take the responsibility for the paucity of literature and the almost complete lack of texts for this specialized field.

Second: The authors state that a casualness and a non-directive fashion of questioning was used. May not some of the material elicited have been inadequate because the comprehensiveness and depth of the material on which the therapists were questioned was belied by the casualness of the methods?

Third: In the material on the occupational therapist-psychiatrist relationship, it seems to me (and I do not mean to be facetious) that the authors have excellent material for further field surveys—"The Psychiatrist in the Field of Psychiatric Occupational Therapy." They state that seventeen out of twenty-one occupational therapists said there was no close liaison with the psychiatrists and the remaining four occupational therapists said there was but it was found on questioning these four that this so-called liaison consisted of the psychiatrist writing a prescription and making visits

to the occupational therapy clinic from time to time. Ocupational therapy is an adjunctive therapy and a form of treatment. The occupational therapist, no matter how well founded in psychopathological dynamics, should never assume the role, prerogatives or responsibilities of the psychiatrist. The psychiatrist must assume responsibility for indicating or prescribing or defining the goals of treatment and indicate attitudes and procedures. The psychiatrists (and many psychodynamically oriented are to be included) who harbor the old, the traditional concepts of occupational therapy, are apathetic and disinterested in occupational therapy for their patients because of their concepts. The occupational therapist functioning in such an environment has little latitude or incentive to function on any basis but that of diversion. And she is wise, without continuing psychiatric guidance and an excellent means of communication with the psychiatrist, to keep her functions on that basis. Even diversional activity without psychiatric guidance has its danger and its inadequacies and can serve to perpetuate psychopathological reaction patterns. There is an old saying, "an occupational therapist is as good as the doctor will let her be." There is truth in this statement and there are also great dangers. The dangers lie in creeping lassitude or self-complacency and in frustration and feelings of helplessness on the part of the occupational therapist.

This is not offered as an excuse for the occupational therapists in this field but as a means of implying that occupational therapy does not function in a vacuum and the guilt of the sins of omission and commission are not ours alone.

I should like to make a positive statement concerning occupational therapist-psychiatrist relationships based on my present experience and it is that where occupational therapy functions under the direction and supervision of a psychodynamically oriented psychiatrist, many of the problems and the weaknesses of the therapist-psychiatrist relationship cease to exist and there result procedures in occupational therapy which are consequently more psychodynamic. Here direction and supervision consist of more than the writing of a prescription and/or an occasional casual visit by the psychiatrist to the occupational therapy clinic. It means two-way discussions of individual patients between the psychiatrist and the occupational therapist. These discussions are held in terms of the patient's needs and why, the procedures indicated and how best they can be obtained, and the patient's reactions to treatment.

The impact of this article and its importance to occupational therapy lies in its implications for each of us as occupational therapists, no matter the position, be it the head of a school or the head of a department or be it a staff therapist. The first implication is that we must come to see ourselves as others see us and while this is a "partial field survey" by two doctors we can see that contained in this article are many truths. There are positive statements too, which help to reduce the traumatic impact. Below are seven statements which I feel embody some of the most important basic implications for us as a profession:

1. The occupational therapist is the product of the school and training affiliations centers. Therefore, some of the onus of this criticism of occupational therapists in the psychiatric field must be reflected to this source, and indicated changes made in curricula by the schools.

2. The psychiatry that is taught in schools of occupational therapy is taught by psychiatrists and the same holds true in the case of training affiliation centers. There is no over-all or basic curricula content or syllabus for psychiatric courses offered in schools and training centers, and this seems of paramount importance to assure adequacy and continuity of instruction throughout.

3. Concomitant with a lack of a syllabus for psychiatric courses is the lack of a formulated theory of psychiatric occupational therapy. This was emphasized in this article, and formulation of a theory is an immediate necessity.

4. School curricula are unbalanced in emphasis (number of courses, course credits, number of semester hours, etc.) with the weight of emphasis to those disabilities, diseases, dysfunctions or inadequacies of a physical origin. There is a need to revamp and balance the courses in psychiatry and psychology.

5. There is a lack of courses on the post graduate level in psychiatric occupational therapy.

6. There is a paucity of published material from occupational therapists in psychiatry.

7. There is a tendency of occupational therapists in this field to accept the "status quo" (and their own particular situation), which may stem from feelings of insecurity because of inadequacies, isolation of their community, or frustration. Nevertheless as a group we do not sell psychiatric occupational therapy to the psychiatrists.

Reading "A Partial Field Survey of Psychiatric Occupational Therapy" has generated a plethora of reactions but there remains one salient fact, namely, that in Drs. Azima and Wittkower, psychiatric occupational therapy has found two friends, two staunch advocates and two sincere critics and we, as occupational therapists in this field, should be grateful. But taking advantage of their interest and advocacy, I should like to ask their continuing efforts for occupational therapy and to ask that as psychiatrists they endeavor through their associations and investigations and writings to indoctrinate their fellow psychiatrists in the importance of better communication between themselves and occupational therapists and in a better understanding and appreciation of occupational therapy and its potentials as treatment for the mentally ill.

Elizabeth H. Smedes, O.T.R.

(The statements and conclusions published by the author are the result of her own study and do not necessarily reflect the opinions or policy of the Veterans Administration.)

To the Editor:

Mr. Redkey and I may define a comprehensive medical rehabilitation center in different terms, however, as long as a person is in need of medical rehabilitation he should be under the overall care of a physician. A pre-vocational unit in a medical rehabilitation center—where the lay supervisor "initiates" patient activity and the physician "visits" is, in my opinion, no longer a medical rehabilitation center but has become a vocational training school or at least a sheltered workshop for the severely disabled. At the risk of being repetitious, let me state that it is my personal conviction that as long as restorative activity is confined to the medical rehabilitation center, such patient activity must be the responsibility of and, at least by area (prevocational, psychological, social, etc.), initiated by the *responsible* physician.

I will take umbrage to the statement "the patient leaves the helpful therapist"! This has dual implications which are not defensible: (1) that the therapist does for, helps, coddles, or to an inordinate degree supports the patient while in therapy; (2) that the prevocational supervisor, by some subtle change of pace,

emancipates the patient from the therapeutic apron strings and suddenly makes a "man" of him. Quite obviously, the skillful therapist is one who progressively emancipates the patient from dependent to independent physical status, secondly and of even greater import is the patient's increasing need for keen understanding as he draws closer to the time where he shall be ready to leave the medical rehabilitation center. Recovery presents an inherent threat to the patient of which he may not be aware; the major job of the rehabilitation team, as the patient's restoration moves on through the pre-vocational phase is to assist the patient to come to a realization of this fact, and to use the increasingly obvious positive factors of his performance to help him overcome the deep seated anxieties which attend his approaching discharge from a therapeutic setting.

Finally I cannot refrain from a brief comment regarding the use of industrial personnel as guides and counselors (committee) for pre-vocational activities. My experience in working with committees of this sort has been quite disappointing, if one expects to have sufficiently close guidance and counsel to be of real meaning to the individual patient. A more practical method of individual aid is the establishment of a "Big Brother" group—the committee may serve effectively in setting policy and in recruiting suitable men and women to act in the "Big Brother" sphere. A committee, per se, is not the practical answer to the individual patient's problem.

Mr. Redkey has presented a very worthwhile subject but I would humbly suggest that in the coming years, the development of this phase of medical rehabilitation must remain under medical auspices to be of greatest usefulness.

Ben L. Boynton, M.D.
Chairman of the Department and
Professor of Physical Medicine
Northwestern University.

To the Editor:

In his paper on the prevocational unit in the rehabilitation Center, Mr. Henry Redkey repeats the challenge to our profession which he first presented at the OVR-sponsored Institute on Occupational Therapy in Rehabilitation at Columbia University in June of 1955.

After very ably describing the need for programs of work exploration and work evaluation in a comprehensive rehabilitation program, he makes some simple arithmetical calculations and comes up with a conclusion which seems quite obvious, yet is most disturbing to us in occupational therapy, namely, "It would appear that the best opportunity for recruiting the needed pre-vocational personnel lies in the field of industrial arts."

Since the arithmetic cannot well be debated, it seems to me that we have two steps to take: (1) admit that we in occupational therapy cannot meet the total *numerical* need for personnel to staff these rapidly mushrooming pre-vocational programs, and (2) supply a sizeable group of leaders or supervisors who are *highly qualified* to work with the handicapped person and to evaluate his vocational potentials accurately by virtue of their medical and psychological training and experience, their intimate understanding of his physical and emotional needs, and their acquired skills in helping him to meet these needs.

Many of us in occupational therapy are heading up these prevocational units in rehabilitation today, and there certainly are others well prepared and qualified to do this job, either on the basis of knowledge and experience presently possessed, or with the help of additional training in these skills and with exposure to industrial and commercial employment situations which will give them better understanding of the needs of the world of work. We need to locate these skilled occupational therapist-evaluators, and encourage them to apply for these jobs and to prove their worth in this important part of the total rehabilitation counseling process.

Many hundreds of other occupational therapists are providing work exploration experiences in their regular treatment programs in all types of hospitals and daily are making observations and evaluations which could be of distinct value to the rehabilitation counselor if they were made readily available to him. Also, there are many of our clients whose potentials can be evaluated adequately only through careful observation throughout an extended period of treatment and tryout in the hospital or the rehabilitation center. For a discussion of some selected clients in this latter category, together with a prepared form for recording and evaluating work behavior in occupational therapy, readers are invited to see a paper by the undersigned in the January-February issue of the Journal of Rehabilitation.

We in occupational therapy can do an important part of this job, and it behooves us to get busy and to prove our worth *now* when the need is so great.

Karl L. Ireland, O.T.R.

To the Editor:

Mr. Redkey, in "The Function and Value of a Pre-Vocational Unit in a Rehabilitation Center," February, 1957, expresses concern for the quality of pre-vocational activities. In this we all agree. However, I question that the way to obtain this is by setting up administratively separate departments and staffing the pre-vocational unit with workers who are not oriented to working with patients, just because these workers are available.

At one time I saw the pre-vocational and treatment aspects as part of occupational therapy, but with physically divided space. After three years in a center, I find that there is no sharp dividing line between the two. Even in the initial stage of treatment, therapists consider the information from the selective placement counselor and psychologist as important as medical and social service information in setting up the patient's program. The activities used in treatment are frequently related to vocational plans. The best motivation for exercise is often to relate the motion being developed to needs on the job, even though the activity being done is not that performed on a job. We sometimes underestimate the patient's ability to transfer learned motions from one skill to another. Since the patient's work habits and basic skills are observed in treatment, much of the information expected from a pre-vocational program is already available. Sometimes the best treatment can be accomplished by using the equipment that is available for job sampling. Therefore the staff must be able to assure quality of treatment as well as instruct in the elements of the job being sampled. I now see an occupational therapy department with the division into noisy and quiet areas, with both treatment and pre-vocational activities carried on in each. Many jobs do not involve noise, therefore should be sampled in a setting without it.

Not all occupational therapists are prepared to evaluate work performance. However, there is an increasing number who are. Some have learned how; some have been trained in industrial arts, engineering, etc., before studying OT; and the occupational therapy

schools are investigating means of including more of such training in schools. One of these therapists in the combined treatment and pre-vocational program could either do the work evaluation or supervise the other therapists in this phase. This is in line with having one therapist to supervise the activities of a daily living program.

It is my opinion that this more closely coordinated program would benefit the patient more than to divide him up between so many separate departments. In addition, other therapists on the staff would be receiving in-service training in work evaluation and would be better prepared to carry out these techniques with patients who are not in a comprehensive center.

The real concern is how the patient can receive the best total treatment without waste of funds or personnel. Since Mr. Redkey and the occupational therapists can have such different opinions as to how this can be accomplished, it seems that a study of the situation is indicated. Funds spent now to determine potentials in existing programs as well as additional needs in types of facilities and personnel could prevent waste in the long run. There are various programs functioning, set up in different ways, that could be studied and evaluated. Also, consideration could be given to training grants to properly prepare personnel to accomplish the desired results.

Mary Britton, O.T.R.

To the Editor:

There can be little disagreement with Mr. Redkey's emphasis on the importance of including pre-vocational exploration, testing and training in the rehabilitation of the severely disabled. The fact that these individuals require rehabilitation and are spoken of as "severely disabled" is tantamount, however, to explaining that they have problems, physical, emotional, or psychosocial which must be considered in some way if these individuals are to be successfully employed. Most medical specialties, such as nurses, physical therapists, occupational therapists, dietitians and social workers, who deal with these people through what may *appear* to be only performance skills have never *dared* establish training programs for their personnel which do not include considerable background training designed to qualify them to understand the patient as a total human being with physical, vocational and psychosocial problems. To do otherwise has been recognized as unthinkable! Yet this article would deny this widely held philosophy and have the severely disabled cared for, evaluated, tested and trained by personnel who possess only performance skills, the industrial arts teachers! The author emphasizes that such a program would be closely supervised by the physician. We must remember that physicians are not trained in any phase of industrial arts. Can you have a team on which the players understand almost nothing of the vocabulary, the equipment and the methods of each other? I have observed many instances where the severely disabled were working under the supervision of industrial arts personnel and a physician. I have heard the above utterly unable to even discuss program planning for given cases. I have seen whole rooms of people at work where no consideration was given to posture, lighting, or eye function. I have known many patients undergoing rehabilitation who had so little to eat that they could not develop the strength required, others at work who should have been in bed, many assigned to tasks actually harmful to them. There are too many examples of this to let us approve a philosophy or system which fosters them.

The alternative: first, let us more carefully define and describe the job which should be done in a pre-vocational unit; second, let us outline the job specifications or the training and ability required of the individual who fills that job; and third, get ourselves qualified! I refer to us, the occupational therapists, for I agree we have much to learn. However, let us not be possessive of our role; the industrial arts teacher has many very applicable skills. To any of them who may read this may I offer the challenge: get adequate training, there is room for you too!

Carlotta Welles, O.T.R.

P.S. Couldn't all of us on the team do a better job of teamwork if we actually stopped to study some teamwork skills?

To the Editor:

The article by Mr. Henry Redkey, "The Function and Value of a Pre-Vocational Unit in a Rehabilitation Center," which appeared in the January-February issue of AJOT, is indeed thought provoking. The addition of a separate pre-vocational unit, such as Mr. Redkey proposed, it seems would duplicate the services now potentially available to the patient in occupational therapy. This duplication would have the following effects: (1) Raise the cost of rehabilitation, which is already so high that it is prohibitive to people of average income. (2) Divide treatment into so many therapies and disciplines that the personal contact, so important in medicine, is substituted for an assembly line type of treatment. (3) Increase the already acute personnel shortage.

The implications of disabilities, whether from medical, surgical or psychiatric conditions, are commonly known to occupational therapists. In many centers the pre-vocational work, such as Mr. Redkey has outlined, has been accomplished by using vocationally related activities to evaluate the total performance of the patient.

True, many occupational therapy programs will need to expand, but this expansion should consist of a shift of emphasis rather than in the creation of an entirely new discipline.

Maryelle Dodds, Capt. AMSC (OT)

To the Editor:

As therapists who apparently are doing effective pre-vocational testing in a vocational training workshop for adult handicapped persons, we are perhaps prejudiced in thinking that such duties are properly the role of an occupational therapist. In any event we feel that Mr. Redkey, in his article in the February issue, is wrong in excluding the occupational therapist from that portion of any center's rehabilitation functions. We are the first to admit that a therapist's training does not prepare him to know specific industrial materials and processes; for this information he must certainly rely upon one trained in those matters—an industrial engineer and/or an industrial psychologist. However, in terms of the skills of observing, evaluating and recording performance, we feel the occupational therapist is uniquely fitted by his professional training to do this. In addition there is the matter of interpreting physician's orders—for despite Mr. Redkey's observations, pre-vocational testing is still done, and we feel should be done, under a physician's supervision. Here again, the therapist's training and experience in medical matters, i.e., understanding diagnoses, their limiting characteristics, precautions to be observed in work, etc., would prove indispensable. Time after time in our particular

situation the occupational therapist's training and experience has been called upon to interpret to the non-medically trained members of the workshop staff the specific implications of diagnoses, physical limitations (as, for example, in more subtle problems of depth perception or astereognosis) which seriously impaired the functioning of individuals appearing otherwise mildly involved. Similarly the job of developing assistive devices and jigs to facilitate work is a logical role for one who has done this for various handicaps routinely in all stages of treatment. This skill in combination with the skill and know-how of an industrial engineer, for example, should solve any manual problems of set-up or lay-out of work.

In conclusion then, since the job of pre-vocational testing is largely comprised of the functions mentioned —interpreting the physician's specific orders for testing; observing, evaluating, and recording performance; and developing assistive jigs and devices—all functions for which the occupational therapist is specifically trained, we should like to ask Mr. Redkey to assume the "show me" attitude and let the occupational therapists show him the job they can and are doing in this field.

Patricia Holser, O.T.R.
Florence S. Cromwell, O.T.R.

Initial Interview . . .

(Continued from page 72)

ling of the patient and to psychological motives revealed on this same real level can be invaluable.

The extent to which the experiment has influenced placement and treatment in the rehabilitation program has not yet been determined. A research project to investigate the degree of effectiveness is being conducted at the present time. It is already clear however that the main problems lie in the area of practical mechanics, the details in organization, and especially in communication. Belief in the team approach is of course basic to the success of any such attempt at integration. The necessary practical machinery is being refined and will be presented at a later date. It is nonetheless thought that the concept of the experiment has proven valid.

An initial interview to determine the specific needs of the patient can play a vital role in integrating a rehabilitation program and contribute to effective therapy for the individual patient.

WORK SIMPLIFICATION

A workshop entitled "Work Simplification in Rehabilitation Programs for Disabled Homemakers" is scheduled for July 1-12 by Michigan State University. This workshop is planned to give training to professional persons who have the responsibility of establishing or supervising programs that involve rehabilitating the disabled homemaker.

Persons may register for the first week without university credit or for the full two weeks with or without university credit. Stipends are available.

For further information write: Work Simplification Workshop, Continuing Education Service, Michigan State University, East Lansing, Michigan.

OT INSTITUTE

The American Hospital Association in cooperation with the American Occupational Therapy Association is conducting an institute for occupational therapists at the Olympic Hotel, Seattle, Washington, April 22-26, 1957.

The purpose of the institute is to provide ways of widening the horizon of the occupational therapist, for example, on the professional level, relationships with other personnel in the health field; on the hospital level, trends in hospital care and relationships with other departments in the hospital; new concepts in rehabilitation as they affect the occupational therapist; increasing opportunities for self-development; responsibilities as an effective department head.

Applications should be mailed, with a check for $35, to

Verne Kallejian, M.D.
Chief, Educational Activities
American Hospital Association
18 East Division Street
Chicago 10, Illinois.

PROSTHETIC REHABILITATION

The Post-Graduate Medical School of New York University is offering courses in prosthetic rehabilitation during the spring semester, 1957, for which a limited number of fellowships are available under the rehabilitation training program of the New York State Department of Health. These fellowships will be limited to personnel who are at present working in this field in New York State or who plan to work in this field in New York State on completion of these courses. Applicants must have credentials acceptable to New York University.

Full information and application blanks may be obtained from Dr. Sidney Fishman, Program Director, Prosthetics Education Program, New York University-Bellevue Medical Center, New York University Post-Graduate Medical School, 342 East 26th Street, New York 10, New York.

CLINICAL PROSTHETICS

Courses in clinical prosthetics, above knee amputations, are now being offered by the prosthetics education program, University of California Medical Center, Los Angeles. These are best described as intensive upgrading courses for physicians, surgeons, therapists, and prosthetists; presenting comprehensive coverage of the prescription, fitting, alignment, fabrication and checkout of the above-knee prosthesis, and gait analysis and training of the patient. Course time for therapists is five days.

The course material represents the latest and best in prosthetic principles and practices, validated by testing laboratories and in the field, offered in clinical form. Enrollment is limited to graduate physicians and surgeons, registered therapists who are graduates of accredited schools, and certified prosthetists.

Five such courses have been presented at U.C.L.A. since September, 1956. A sixth course will be offered from April 29 to May 3, 1957.

A similar course in upper and lower extremity prosthetics and in functional arm bracing will be offered in the fall of 1957 and the spring of 1958. Exact dates will be announced later.

Inquiries concerning the various courses should be addressed to: Prosthetics Education, University of California Medical Center, Los Angeles 24, California.

Georgia Warm Springs Foundation

GRADUATE COURSE

Physical Therapy and Occupational Therapy

In the Care of *Neuro-Muscular Disease*

This course is open to graduates of approved schools of physical and occupational therapy. Such graduates must be members of the American Physical Therapy Association and/or American Registry of Physical Therapists, or American Occupational Therapy Association.

Entrance dates: First Monday in January, April and October.

Course I—Emphasis on care of convalescent neuromuscular disease with intensive training in functional anatomy, muscle testing, muscle reeducation and use of supportive and assistive apparatus. This course is complete in itself.

Course II—Three months duration with course I prerequisite. Emphasis on care of severe chronic physical handicaps with intensive training in resumption of functional activity and use of adaptive apparatus.

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For further information contact:

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New York City: Part time occupational therapist, need not be registered, to assist in OT program in private psychiatric hospital. Contact: Mr. J. Lebits, River Crest Sanitarium, Ditmars Blvd. & 26th Street, Astoria, N. Y.

Senior Occupational Therapist: for progressive program in fully approved, non-sectarian, acute, general hospital. Our program includes functional and diversional therapy for pediatric and adult patients. Expansion program now underway will offer opportunity for work in rehabilitation unit. A minimum of one year's experience preferred. Liberal personnel policies. Salary open and commensurate with experience. Apply to Personnel Director, Mount Sinai Hospital, 1800 East 105th Street, Cleveland, Ohio.

New York City: Position open for O.T.R. to head department in private psychiatric hospital. Modern OT building. Full maintenance if desired. Contact: Mr. J. Lebits, River Crest Sanitarium, Ditmars Blvd. & 26th Street, Astoria, N. Y.

Wanted: Two registered occupational therapists; one to head the department, in a modern 600 bed hospital for treatment of tuberculosis—sosial security and state retirement—liberal annual and sick leave privileges—salary $3264 to $4020—hospital located in college town of approximately 25,000 population. Apply: Eastern North Carolina Sanatorium, Wilson, N. C.

Registered occupational therapist for 250 bed convalescent hospital. Experienced in treatment of physical disabilities. U. S. citizen, under age 50. Salary range $415-519 plus vacation and holidays. Write to Medical Director and Superintendent, Tulare-Kings Counties Hospital, Springville, Calif.

Immediate opening for director of occupational therapy department. Salary open. Pleasant surroundings and working conditions. OT dept. now operating in the New Norfolk State Hospital Administration Building, with spacious quarters, new and modern equipment. Contact Dr. C. G. Ingham, Supt., Norfolk State Hospital, Norfolk, Nebraska.

Registered occupational therapist with experience and interest in physical disabilities, ADL, recreation. For information write: Personnel Section, Mayo Clinic, Rochester, Minnesota.

Wanted—an occupational therapist for East Texas Treatment Center in Kilgore, Texas. Good salary and working conditions in a good town. Write or phone Mrs. Stuart Smith, Box 48, Price, Texas.

Staff occupational therapists wanted immediately at Utah State Hospital, Provo, Utah. Working conditions are good and time-off provisions are liberal. Salary range $3720 to $4800 per year. Increases are based on merit. Applicants must be registered or eligible for registration. Please direct inquiry to Director, Rehabilitation Therapy, Box 270, Provo, Utah.

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Supervising occupational therapist to develop chronic care and pre-vocational programs. Out patient center serving Westchester County. Salary $4600-$5880. Contact Eugene Moskowitz, M.D., Mobility, 427 Main Street, New Rochelle, New York.

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Registered or graduate occupational and/or recreational therapist for small public mental hospital as assistant in occupational therapy or director of recreational program. Please state expected salary and detailed personal qualifications. Write Superintendent, Nevada State Hospital, Box 2460, Reno, Nevada.

Registered occupational therapists for California hospitals, schools for cerebral palsied and correctional institutions. Graduates of approved schools of occupational therapy without experience start at $4,296; opportunities for advancement to $7,356. Excellent employee benefits. Write Medical Recruitment Unit, State Personnel Board, 801 Capitol Avenue, Sacramento, California.

Occupational therapists—salary $3456. Vacation and sick leave, retirement plan, and single room at nominal cost. Located in historic Williamsburg. Apply Personnel Office, Eastern State Hospital, Williamsburg, Virginia.

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Position open for registered occupational therapist in home for the aged. May be either full or part time. Write: Dr. Julius Weil, c/o The Montefiore Home, 3151 Mayfield Road. Cleveland Heights, Ohio.

Positions open for staff therapists in progressive well-equipped OT department of largest private mental hospital (750 beds) in USA. Well-rounded program includes both workshop and ward classes. Paid annual vacation and sick leave; laundry and maintenance provided. Pleasant working conditions, beautiful surroundings. Write to Dr. J. Butler Tompkins, Superintendent, Brattleboro Retreat, Brattleboro, Vermont.

Western Psychiatric Institute and Clinic (University of Pittsburgh) now has interesting position open for a staff occupational therapist. Address all inquiries to Miss Dorothy J. Wirt, Director of Occupational Therapy, 3811 O'Hara Street, Pittsburgh 13, Pennsylvania.

Supervisory position available June 1st in new occupational therapy division of well established physical medicine department. Functional treatment emphasis with acute patients of general hospital. 20 to 40 hours week with plans to expand into new quarters. Project covered by federal grant. Apply to Mrs. Clayton L. Besch, Jr., O.T.R., Occupational Therapy Department, Albany Hospital, Albany, New York.

Occupational therapists—junior and senior grade. Salary range: $335.00 to $485.00 per month minus $25.00 for full maintenance. Salary dependent upon experience and training. Duties: occupational therapist in state mental hospital with a reorganized, expanding program. Sectional supervision of OT units in admission service, intensive treatment service, and tuberculosis service. Senior therapists may supervise junior therapists, student nurses, and OT aides. Write Superintendent, Logansport State Hospital, Logansport, Ind.

Good opening for an occupational therapist who is able to carry general administrative responsibilities including supervision of new intensive treatment units. Dynamic rehabilitation program requires candidate with good potential for teaching and supervising other occupational therapists, students and affiliates. Available to graduates of approved schools with two years experience. Salary range $4020-$5460. Starting rate based on qualifications. Apply to William F. Green, M.D., Fairfield State Hospital, Newtown, Connecticut.

Staff occupational therapist to assist in evaluation and training of handicapped employees and trainees in large industrial rehabilitation workshop. Goodwill Industries of Southern California, 342 San Fernando Road, Los Angeles 31, California. Telephone CApitol 2-5131.

Two OTR vacancies—New Hampshire State Hospital, Concord, N.H.—2700 bed psychiatric hospital. Student training program, 37½ hour week, 3 weeks vacation—generous sick leave. Salary $3430. Write Eileen Dixey, O.T.R.

Long Island Hospital, Boston, has openings for occupational therapists to work with an alcoholic rehabilitation program—40 hour week—sick benefits—vacation—room and board if desired. This program is recognized by the Yale University School for Alcoholic Studies. Write Superintendent John R. McGillivray, Long Island Hospital, Boston 69, Mass.

Registered, or eligible, occupational therapist to supervise overall occupational therapy and shop program for 550 tuberculosis patients. with minimum of bedside contacts. To $5000 depending upon qualifications. Liberal holidays, vacation, and illness allowances. Please send detailed resume of training and experience to Personnel Office, State Tuberculosis Hospital, Harlingen, Texas.

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Two positions open for registered occupational therapists in state psychiatric hospital. 40 hour week, paid sick leave, laundry furnished, living quarters and meals available. Salary open dependent upon experience and training. Opportunity for promotion. Write M. A. Tarumianz, M.D., Superintendent, Delaware State Hospital, Farnhurst, Wilmington, Delaware.

Qualified occupational therapists—2—with experience, to work as members of medical team in 900 bed teaching hospital affiliated with Western Reserve University. Supervisory openings in tuberculosis section and in physical disabilities section, including the poliomyelitis respirator center. Five-day week; paid vacation and sick leave; meals, room, and laundry available at minimal cost. Salary dependent upon applicant's qualifications. Pension plan. Apply: Nadene Coyne, M.D., Director, Department Physical Medicine and Rehabilitation, Cleveland City Hospital, 3395 Scranton Road, Cleveland 9, Ohio.

Wanted immediately—assistant director, OT department 100-bed accredited, private psychiatric hospital. Excellent working conditions offering wide range of experience. Team approach. Contact Elizabeth Windsor, OTR, North Shore Hospital, (formerly North Shore Health Resort) 225 Sheridan Road, Winnetka, Illinois.

Experienced therapist, man or woman, for instructor in OT school. New position. Must be interested in teaching crafts as well as theory. Advancement possibilities good. Salary open. Write Director, School of Occupational Therapy, College of Puget Sound, Tacoma, Washington.

OTR needed immediately to supervise well-equipped unit for mentally ill, emphasizing dynamic expression of emotion through activity and pre-vocational exploration. Salary $3600 to $4500, 5 day week, 2 weeks vacation, 11 legal holidays, noon meal and laundry furnished. Write to Marjorie Evert, OTR, Director Occupational Therapy, Arizona State Hospital, Phoenix, Arizona.

Progressive department of physical medicine in a teaching and research hospital offers position for registered therapist with experience in physical disabilities. Program includes treatment of multiple disabilities, including upper extremity amputees, and work on polio respirator center. Emphasis on team approach; opportunities for research; student affiliation center; generous personnel benefits. Salary open. Write: Occupational Therapy, Department of Physical Medicine and Rehabilitation, University Hospital, University of Michigan, Ann Arbor, Michigan.

Excellent opportunity for young, imaginative registered occupational therapist. Patients with upper extremity paralysis, require positive approach to their needs for communication, feeding, and diversion. Join research projects already in progress. Write William D. Loeser, M.D., Chronic Disease Research Institute, 2183 Main St., Buffalo 14, N. Y.

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Staff occupational therapist for Cerebral Palsy School-Clinic of Atlanta, Inc. Day school program, clinic and out-patient services for 100 children ranging in age from 18 months to 17 years. Five day work week, public school holidays, 2 weeks summer vacation, sick leave, salary open. Send qualifications and work summary to Mrs. Harold M. Seymour, Business Administrator, 1815 Ponce de Leon Ave., NE, Atlanta, Ga.

Registered occupational therapist for 2,000 bed psychiatric hospital, 12 miles out of Boston. Salary range $3,328-$4,264. For further information contact: Miss Helen Storr, OTR, Head Occupational Therapist, Metropolitan State Hospital, Waltham 54, Mass.

Registered occupational therapist needed for the Psychiatric Institute. Responsible for planning and directing of patient activities program. Excellent facilities, three week vacation. Many benefits. For information write to Personnel Department, Michael Reese Hospital, 29th St. & South Ellis Avenue, Chicago 16, Ill.

Director, rehabilitation therapy department, immediate opening. Organizes and directs occupational therapy, industrial therapy and hospital recreation. Excellent working relationships in treatment oriented hospital. Salary, $4800 to $6600 per year. Starting salary open depending on training and experience. 40-hour work week, two weeks vacation, 12 paid holidays and 12 sick days, accumulative to 30 sick days. Hunting, fishing and sports conveniently available. College town. Contact Personnel Director, Utah State Hospital, P.O. Box 270, Provo, Utah.

Occupational therapist wanted for private office practice of physical medicine and rehabilitation. Prescribed treatments will be comprehensive for all types of occupational therapy, exclusive of diversional. All types of disabilities. Adults predominate. Salary open. Apply to Nila K. Covalt, M.D., Box 1494, Winter Park, Fla.

Immediate opening for two staff therapists in a private psychiatric hospital. Experience not required. Pleasant surroundings and working conditions. Benefits include paid vacation, sick and holiday time. The hospital has a pension plan and social security. Write to Miss Anna F. Moore, O.T.R., Director of Occupational Therapy, Friends Hospital, Phila. 24, Pa.

Wanted: occupational therapist with experience. Residential center for emotionally disturbed children. Write Louise Hogan, O.T.R., Hawthorn Center, Northville, Michigan.

Position open: qualified occupational therapist, female, for in-patient program treating children up to 12 years of age with orthopedic and neurological disabilities including cerebral palsy, post polio, and amputee. Medical team approach, living quarters, and meals available at minimum cost. Uniform laundry provided. Salary commensurate with experience. Contact: Kathleen Wingate, Superintendent, Edith Hartwell Clinic of the University of Rochester, Le Roy, New York.

Occupational therapist: assistant director for well organized, therapeutically orientated program in progressive psychiatric hospital, located within the city limits of Lexington, Kentucky. New intensive treatment building with well planned and fully equipped occupational therapy shop about to be opened. University of Kentucky close by offers educational and cultural advantages. Salary commensurate with experience, 40 hour week, paid vacation and sick leave, 13 holidays per year, opportunity for future advancement to director's position, excellent living accommodations for single person. Contact: Mrs. Frances Jonakin, Occupational Therapy Consultant, Eastern State Hospital, Lexington, Kentucky.

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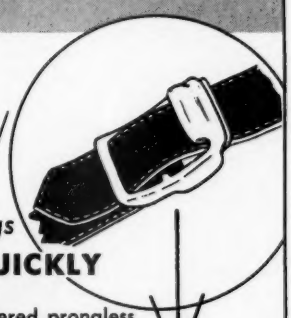

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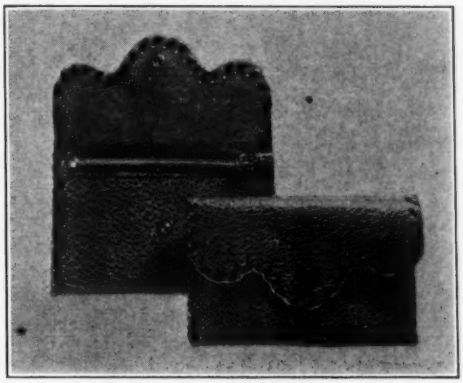

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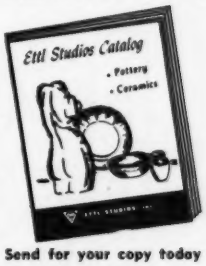

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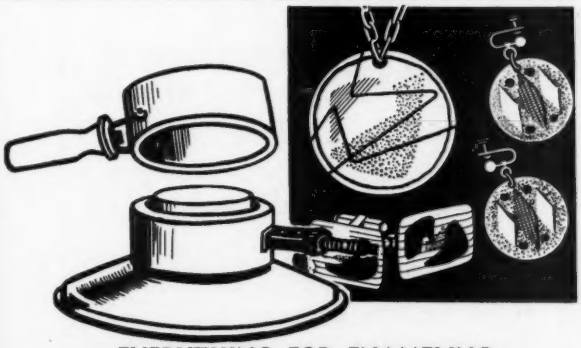

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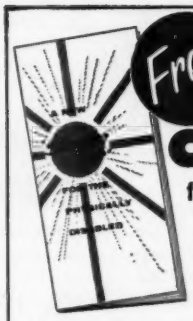

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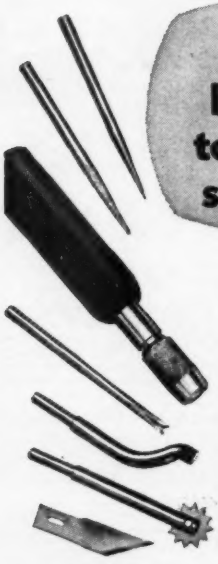

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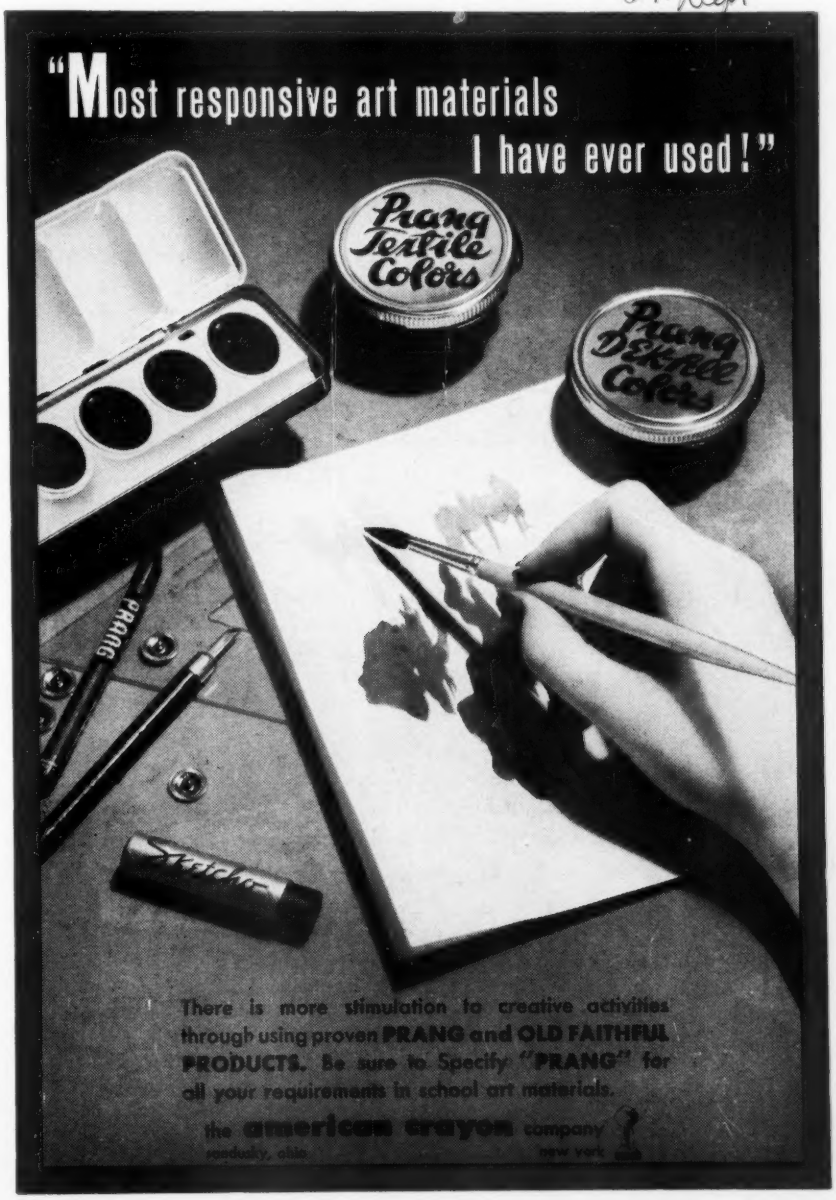
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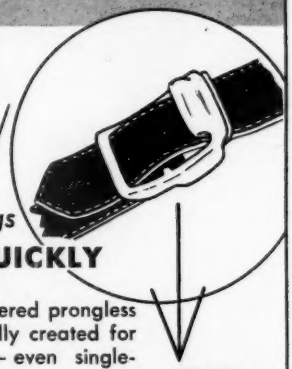

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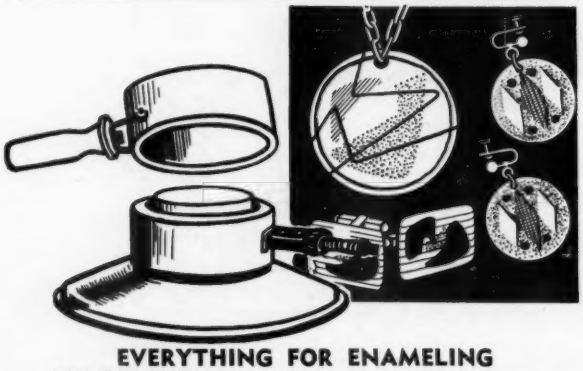

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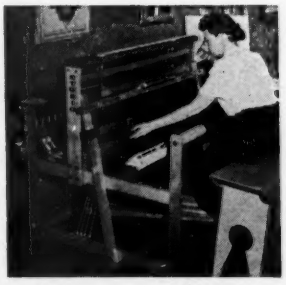

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A STUDY OF THE RELATIONSHIP BETWEEN CERTAIN PERSONALITY FACTORS AND SUCCESS IN CLINICAL TRAINING OF OCCUPATIONAL THERAPY STUDENTS*

MARY D. BOOTH, O.T.R.

PROBLEM AND BACKGROUND

Occupational therapists are interested in finding instruments for predicting success of students in the field. In spite of the increasing demand for therapists, there has been little willingness to accept a poor substitute. Grade point average, or the ability to pass the course requirements, are not completely satisfactory predictors of success in a field where personal-social relations are extremely important.[2,6] There is always the exceptionally good academic student who does poorly in clinical training and the student who barely passes the college courses but does well in the hospital situation. Loss of time, money and morale make changes in objectives difficult if not impossible. Therefore, from the point of view of the prospective therapist himself, it is advisable to be able to predict whether he may succeed or not before entering upon a five year educational program.

This study is an attempt to determine whether Guilford's Inventory of Factors STDCR and the Kuder Preference Record can be used as predictors of success of occupational therapists.

DESIGN OF STUDY

Problem. In previous studies of nursing and education students it was found that beyond a minimum level, intelligence is not an important factor in on-the-job success in these fields.[9, 10, 11, 14] Grades which do predict such success are usually in professional courses which are not available to students making a choice between two vocational objectives. However personality tests, as shown by Beaver, Spaney, Shaw, Schmid, and Seagoe, appear to be of great value in counseling.[1, 3, 2, 10, 11]

It would seem that some desirable traits may be measured by the Guilford's STDCR Inventory. The traits measured are social introversion-extroversion, thinking introversion-extroversion, depression, cycloid disposition and rhathymia. Interests as measured by the Kuder Preference Record may also measure relevant interests as inferred above. The nine interests measured are mechanical, computational, scientific, persuasive, artistic, literary, musical, social service and clerical.

The study is an attempt to determine whether or not there is any relationship between the personality traits, as measured by these tests, and success in clinical training and on the registration examination for occupational therapists. This information would be useful in selection of students for occupational therapy schools and in vocational advisement.

Subjects. The study was based on 91 occupational therapy graduates of San Jose State Col-

*An abstract of a thesis presented to the faculty of the department of psychology at San Jose State College, California, in partial fulfillment of the requirements for the degree of Master of Arts.

	S	T	D	C	R
Pediatric	.05	.22*	-.13	-.07	-.10
Psychiatric	.00	.05	-.12	.13	-.08
Tuberculous	.06	-.01	.16	.21*	.07
Orthopedic	-.01	-.02	-.02	-.08	-.05
Total	.03	.01	-.07	-.07	.02
Registration Examination	-.13	.19	-.05	-.13	-.36**

*Significant at 5% level of Confidence
**Significant at 1% level of Confidence

Table I. Coefficients of correlation of scores on Guilford's inventory of factors S,T,D,C,R and grades in clinical training and on registration examination ($N = 91$).

lege. They completed their clinical training and took the registration examination between 1951 and 1954. There were five men and eighty-six women; their ages ranged from twenty-one to forty-one years. The median age was twenty-one. Their mean score on the registration examination was 5.03 and the standard deviation was 7.63. (Grades on the examination are reported in deciles only.) Means of grades on the occupational therapy student clinical training report ranged from 72.5 to 77.9 with standard deviations varying from 7.7 to 10.04.

Tests and Criteria. Guilford's STDCR Inventory and Kuder's Preference Record which are currently administered to all occupational therapy majors at San Jose College were used. Guilford[5] in his manual of directions and norms for the Inventory of Factors STDCR reports that, "A combination of alternate sixths of the items into two pools of approximately equal lists and use of the Spearman-Brown formula gave estimated reliabilities of .92, .89, .91, and .89 for factors S. T, D, C, and R, respectively in a population of 200 (100 men and 100 women) selected at random from the criterion groups." Kuder[6] reported the results of eight studies of the reliability of the subscores of the Preference Record. The coefficients of correlation ranged from .83 to .98 with a mean of .90. The tests were repeated after three days to two months. Herzberg, Bouton and Steiner[7] in a study on the stability of the Kuder Preference Record found reliability coefficients which ranged from .63 for social service and .77 for artistic. The study was based on test and retest 15 to 49 months apart.

There were two criterion measures of success used in this study; one was grades on the occupational therapy student clinical training report, the other was grades on the registration examination given by the American Occupational Therapy Association.

In order to estimate the reliability of the student training report a Pearsonian coefficient of correlation was computed. An r of +.86 was found. When this was corrected by the Spearman-Brown prophesy formula, the r was equal to +.92. Because the rating scale has only eleven items, it is rather short for such a high reliability coefficient. The range used on the scale is also limited thus theoretically decreasing the reliability. However, it would appear that the rating scale is acceptably reliable.

	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
Pediatric	.12	.00	-.03	-.03	.08	-.23*	-.08	.09	-.05
Psychiatric	.05	-.02	-.00	.05	.07	.17	-.15	.11	-.05
Tuberculous	.01	-.20	.02	.20	.10	.03	-.18	-.19	.04
Orthopedic	-.03	.02	-.13	.18	.05	.06	.04	.11	.07
Total	-.01	-.03	-.08	.22*	.11	.11	-.13	.06	-.01
Registration Examination	.03	-.09	.07	-.12	.09	.30**	-.04	.09	-.14

*Significant at 5% level of Confidence
**Significant at 1% level of Confidence

Table II. Coefficients of correlation of scores on Kuder preference record and grades in clinical training and on registration examination ($N = 91$).

The registration examination given by the American Occupational Therapy Association consists of 300 multiple choice items. Part I of the examination and Part II have been correlated against each other at every examination. The correlations have ranged from +.75 to +.85. In general, it would seem that the examination is fairly reliable.[4]

Procedure. Pearson's product-moment coefficient of correlation was computed for each factor of the STDCR Inventory and each of the nine interests tested on the Kuder Preference Record with grades in each area of clinical training, with a total score (sum of all clinical training scores) for clinical training, and with the registration examination. The coefficients of correlation were calculated on the basis of raw scores.

Means and standard deviations of scores on Kuder Preference Record were computed for San Jose State College occupational therapy students. These scores were compared with the norms for occupational therapists as given by Kuder and

with University of Wisconsin freshmen women.[8] Of the norms reported by Kuder, the latter group of subjects most nearly resembled the general population from which the occupational therapy majors were drawn. Similarly, means and standard deviations of scores on Guilford's STDCR Inventory were computed for occupational therapy students at San Jose State College and compared with students in general at San Jose State College. In order to determine whether the difference between the mean scores of San Jose State College occupational therapy students differed significantly from the mean scores of University of Wisconsin freshman women on the Kuder Preference Record, a *t* ratio was computed. For the mean scores on Guilford's Inventory of Factors STDCR for occupational therapy majors and college students in general at San Jose State College, *t* ratios were also calculated. No *t's* reached the 5% level of confidence for either test.

RESULTS

STDCR Inventory Correlations. The coefficients of correlation for the Guilford STDCR Inventory and grades in clinical training and on the registration examination are shown in Table I. The T score at the 5% level of confidence for 89 degrees of freedom is .206; at the 1% level of confidence it is .269. Only two scores are significant at the 5% level of confidence. They are the coefficient of correlation of the T score (thinking introversion-extroversion) and grade in pediatric clinical training and of the C score (cycloid disposition) and grade in tuberculosis clinical training.

In addition there is a correlation of —.36 between the R factor (rhathymia) and grades on the registration examination. This coefficient of correlation is significant at the 1% level of confidence.

Preference Record Correlations. The coefficient of correlation of scores on the Kuder Preference Record and grades in clinical training and on the registration examination are small (see Table II). However, there is a positive relationship of the order of .30 between "literary interest" as measured on the Kuder Preference Record and grades on the registration examination. This coefficient of correlation is the only one significant at the 1% level of confidence. At the 5% level of confidence there is a negative coefficient of correlation between grades in pediatric clinical training and literary interest. Also at the 5% level of confidence is the coefficient of correlation between the total grade in clinical training and "persuasive interest." The coefficients of correlation between interest in persuasion and grades in tuberculosis and orthopedic clinical training approach the 5% level of confidence.

On the STDCR Inventory the *t* ratios did not show a significant difference between the mean scores of occupational therapy majors and students in general at San Jose State College.

The T scores did not show a significant difference between the mean scores of San Jose

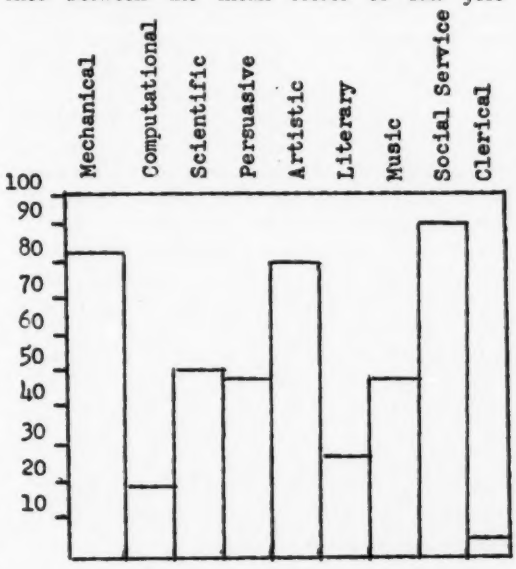


Figure 1

State College occupational therapy majors and University of Wisconsin women on the Kuder Preference Record.

However, on the Kuder Preference Record there seems to be a characteristic profile with scores above the 80% for interests in "mechanical", "artistic," and "social service" and scores below 20% for "clerical" and "computational interests" (see Figure I).

DISCUSSION

Reliability and validity of occupational therapy student clinical training report. It is possible to question the reliability and validity of the occupational therapy student clinical training report since it shares all the problems associated with scales in general.

The reliability of the report may be questioned on several counts, the most important being the number of raters. Since the students were assigned to four medical specialties and to different institutions for similar affiliations, the grading was done by twenty to thirty different raters.

Clinical experience of raters ranged from one to fifteen years. The *Rater's Guide* provided help in standardizing the rating of students. Since San Jose State College occupational therapy students took their training almost exclusively within the State of California, the raters received some uniform instruction through local meetings and individual conference. Additional uniformity of

rating was gained since the supervisor was able to observe the student for a period of one to three months. If there was more than one supervising therapist within the hospital, a combined rating was usually given. Students' rating scores were forwarded to the school and not the next affiliation. Bias because of past ratings was thus avoided.

The number and types of patients varies from one hospital to another and also within a hospital from time to time. Consequently, the students were not faced with problems of equal difficulty. Change of personnel both within and without the occupational therapy department may have presented uncontrolled variations.

A student's performance may have been influenced by illness or personal problems and consequently the rating did not represent his real abilities. These errors were partially offset by the long period of training and the supervisor's ability to evaluate the circumstances.

In spite of the above difficulties there is some evidence that the ratings are reliable. A Pearsonian coefficient of correlation, corrected by the Spearman-Brown formula, was found to be .92. Engelhart[3] found ratings in orthopedic clinical training had a reliability coefficient of .81.

Reliability and validity of the registration examination. Engelhart[3] found a correlation of +.34 significant at the 1% level of confidence between the grades on the registration examination and grades in psychiatric clinical training. Correlations of +.23, significant at the 5% level of confidence were found between grades on the registration examination and orthopedic clinical training and a composite score for clinical training. The correlations were probably due to the fact that one-half to two-thirds of the items on the registration examination were based on orthopedics, psychiatry and related basic sciences. She found no relationship between tuberculosis and pediatric clinical training and the registration examination. This is not surprising because of the limited number of items covering these fields. While the *r*'s were low, it would seem that the examination may be valid not only for the course work which it covers but for orthopedic and psychiatric clinical training and for the total grade for clinical training.

Significance of the Correlations. In the present study only six of the eighty-four coefficients of correlation which were computed were significant, four at the 5% level and two at the 1% level of confidence. On the basis of chance alone 4.2 correlations significant at the 5% level would be expected. Hence the significance of the six correlations seem doubtful.

Significant Correlations. One of the largest correlations (see Table II) was found between "literary interest" as measured by Kuder's Preference Record and grades on the registration examination. Phillips,[9] in a study comparing the relationship of the Kuder Preference Record Scales to college marks, notes that the "only reliable *r* is between 'literary interest' and the Ohio State Psychological Test." The *r* was +.38. On logical grounds, it would appear that *r* of +.30 between "literary interest" and grades on the registration examination for occupational therapy majors at San Jose State College may represent a real relationship. Because of this corroborating evidence, it is of some interest to speculate as to the possibility of other correlations which may have real significance.

The registration examination is negatively correlated at the 1% level of confidence with the R score or rhathymic factor (see Table I). It seems likely that the happy-go-lucky person is less apt to spend time studying than the more conscientious student.

The following *r*'s are significant at the 5% level of confidence only and may have occurred by chance alone. An *r* of —.23 was found between "literary interest" and success in pediatric clinical training. It may be that a high academic interest is disadvantageous in handling children who have a short span of attention and who can grasp only superficial facts about a variety of activities. It is more probable that this correlation appeared by chance.

An *r* of +.22 was found between the "persuasive interest" and the total score for clinical training. Certainly the motivation of patients, selling his job to the members of a hospital staff and arousing enthusiasm in volunteer workers require the abilities which are indicated by an interest in persuasion. While the coefficient of correlation between "persuasive interest" and success in pediatric and psychiatric clinical training are insignificant, interest in persuasion is close to the 5% level of confidence for both tuberculosis and orthopedic clinical training. The *r*'s are +.20 and +.18 which are very close to the .206 which is significant at the 5% level for 89 degrees of freedom.

It is interesting to note that the coefficient of correlation between tuberculosis clinical training rating and the C factor (cycloid disposition) is +.21, an *r* significant at the 5% level of confidence. Since rest is the keynote to the treatment of tuberculosis, individuals with an even disposition would be expected to be more successful in a tuberculosis sanatorium than those with a fluctuating disposition. In other fields of occupational therapy the patients need change and stimulation in order to arouse interest in new efforts and enjoyment of new experiences.

(Continued on page 126)

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN COLLEGE GRADES AND ON-THE-JOB PERFORMANCE DURING CLINICAL TRAINING OF OCCUPATIONAL THERAPY STUDENTS*

HELEN V. ENGLEHART

INTRODUCTION TO THE STUDY

Occupational therapy has been a recognized major objective of college students for about twenty-five years. During this time one of the chief problems of teachers in the field and the American Occupational Therapy Association, which coordinates all phases of the work, has been to determine whether or not the courses being taught were critically related to successful on-the-job performance. Up to the present time no systematic investigation of the relationship between performance in required courses and performance on-the-job has been reported.

The American Occupational Therapy Association made an investigation of the relationship between college grades and registration examination scores during 1947 and 1948. However, the problems of reliability of grades and variations between the various schools resulted in discontinuance of the study.

Statement of the problem. It was the purpose of the present study to (1) investigate the predictive value of performance in required college courses for performance on-the-job during clinical training; (2) investigate the predictive value of performance in required courses for the national registration examination; (3) investigate the predictive value of performance on-the-job during clinical training for the national registration examination.

SAMPLE TESTED AND INSTRUMENTS USED

The data for the study consisted of the grades earned in required college courses, the numerical scores on the occupational therapy student clinical training report, and the decile score earned on the registration examination. Grades were recorded from the college registrar's records, and the other data from the occupational therapy department files.

Subjects. The subjects for the present study were 104 students who graduated from San Jose State College, San Jose, California, during the college years 1945 through 1951. Ages ranged from 20 to 45, with 97 ranging from 20 to 29 and 7 from 30 to 45. Marital status was unknown. Social and economic status varied but were similar to the extent that all were college graduates. Ninety-nine of the subjects were women and five were men.

College grades. For the present study college grades were translated into numbers as follows: A = 4; B = 3; C = 2; D = 1; F = 0.

Table 1 presents the means and standard deviations of all course grades used in the study. It will be noted that the mean grade in the social recreation course was found to be 3.41, or almost as high as the highest grade possible. However, the means for the other required courses are nearer the middle of the grade range, which is 2. The lowest mean found was in the sociology course where 2.38 was found. The standard deviations varied from .25 to .88.

Means and standard deviations for all course grades. (N = 101 to 104.)

Course	*Mean*	*Standard Deviation*
OT. crafts	3.05	.25
OT laboratory	2.87	.35
Social recreation	3.41	.55
Biological science	2.41	.88
Medical information	2.44	.79
Sociology	2.38	.83
OT theory	2.47	.71

Table I

The subject of grades is one about which much has been written and about which considerable differences in opinion exist. Ross[6] feels that teachers marks (grades) are lacking in both reliability and validity and that the principal reason for this is that teachers allow various extraneous factors to enter into the determination of grades. Carter[2] in a study of the non-intellectual variables entering into teachers grades found evidence to support the conclusion that personality, socio-economic status and intelligence seemed to be factors in the assignment of grades, but that grades represent more than chance estimates of student achievement. Kelley[14] states the opinion that whatever capacity it is that a

*An abstract of a thesis presented to the faculty of the department of psychology at San Jose State College, California, in partial fulfillment of the requirements for the degree of Master of Arts.

grade in any given subject stands for, it is a fairly accurate estimate of that capacity when the grade represents several estimates from more than one teacher.

Most of the grades used in the present study were based on written work, even in courses such as occupational therapy laboratory and social recreation. These courses are largely performance courses but the instructor for each stated that course grades were based largely on written work.[5, 8] Written work in the form of case histories of patients, written reports of patients' treatment and progress, library research projects, and quizzes on the outside reading are the basis for grading in the laboratory course. Grades in social recreation are based largely on written plans for group entertainment, a card file of various types of group projects, and written tests covering these materials.

The relationship found between ratings in the four fields of clinical training. (N=101 to 102.)

	Tuberculosis	*Orthopedics*	*Pediatrics*
Psychiatry	.23*	.26**	.22*
Tuberculosis		.29**	.37**
Orthopedics			.28**

*Significant at 5% level
**Significant at 1% level

Table II

No estimate of the reliability or validity of the grades used in the present study was attempted. The possibility of various kinds of error from these sources will be considered in evaluation of the results.

Ratings. The total score received by each student was used in the study of the occupational therapy student clinical training report. A measure of over-all performance during clinical training in the four fields was obtained by giving the ratings in each field equal weight and adding them to yield a single score. The office of the American Occupational Therapy Association advises that no studies of the reliability of the rating form have been made.

It will be noted, as shown in Table II, that the relationships found between ratings during clinical training in psychiatry and tuberculosis was $r = .23$, and between psychiatry and pediatrics $r = .22$, both of which are significant at the 5% level. All other relationships found were significant at the 1% level, as indicated by correlation coefficients of $r = .26$ between psychiatry and orthopedics; $r = .29$ between tuberculosis and orthopedics; $r = .37$ between tuberculosis and pediatrics; and $r = .28$ between orthopedics and pediatrics.

The level at which a rating scale is considered reliable varies from one authority to another. However, it is generally agreed that a correlation coefficient of $r = .70$ is necessary for a scale to be acceptable. The self-correlation for orthopedics, $r = .81$, falls well above this lower limit of acceptability. Consequently, statistical results indicate that the rating scale has high reliability for the field of orthopedics. The low but significant relationships found between ratings in orthopedics and ratings in the other three fields of clinical training might suggest that the scale is not measuring the same things in the different fields of training. In spite of these low intercorrelations it is still possible that self-correlations in the other fields of training, if data were available to make such a test, would not be significantly different from the self-correlation in orthopedics. In this event the scale could be considered reliable for the other clinical training affiliations, as well as for orthopedics.

Table III shows the means and the standard deviations of the ratings for each of the four fields of clinical training as obtained from the occupational therapy student clinical training report. It will be noted that the means for orthopedics, 76.3 and pediatrics, 76.8, are very nearly the same but the standard deviations 8.81 and 10.10, show the greatest variation of the four sets of ratings. The greatest variation between means was found between tuberculosis, 83.6, psychiatry, 73.7, but the standard deviations were very nearly the same, 9.90, and 9.78.

Means and standard deviations for the four fields of clinical training. (N=103 to 104.)

	Mean	*Standard Deviation*
Tuberculosis	83.6	9.90
Psychiatry	73.7	9.78
Orthopedics	76.3	8.81
Pediatrics	76.8	10.10

Table III

The variation between the four sets of means is 9.9, or about one standard deviation. The variation between the means for orthopedics and the other training fields was found to be .5 to 7.3. This seems to substantiate the suggestion made above, that possibly the results of a test of reliability of the scale for the three fields of training for which data were not available to make such a test might produce results similar to that found in orthopedics. The low relationships between the ratings in the different fields of training and the similarity of the means and standard deviations suggest that the scale measures different fields of training, but may not suggest that the reliability of the scale is not similar.

Prior to 1950 the numerical scoring on the rating form was not the same as that which is used at the present time. In order to have just

one set of scores to work with the scores prior to 1950 were statistically converted to the new scoring.

The registration examination. Information regarding the registration examination is limited due to the fact that it was constructed at the office of the American Occupational Therapy Association. Only enough copies for one for each student taking the examination are sent out to the colleges where it is administered, and immediately upon completion of the examination the questions as well as the answer sheets are returned to the association office. The examination is composed of two parts. Each part contains 150 questions and two hours are allowed for completion of each part. The questions are all objective type, multiple-choice items. It covers all of the fields of clinical training and the required college subjects, i.e. occupational therapy crafts, biological science, occupational therapy theory, medical information, social recreation, and sociology.

The association reports that the scores on part I and part II of the examination are correlated against each other at every administration, February and June of each year. The reliability coefficients reported have ranged from .75 to .85. Means and standard deviations for the examination have not been reported but the association states that it has shown considerable stability, even though there has been the deletion and addition of new items, sometimes running as high as 25% or more for a single administration.

Whether or not the reliability coefficients of the registration examination as reported by the association have been corrected by the Spearman-Brown formula was not indicated. If not, the reliability coefficients reported would be stepped up by its use to a point where the examination would be considered quite reliable.

Standards for reliability of tests seem to vary from one authority to another. Ross[6] states that a reliability coefficient of .94 is necessary if a test is to distinguish between individuals, but that .70 is sufficient for group prediction. Greene, Jorgensen, and Gerberich[3] hold that test reliability of .80 is evidence of marked reliability. With the lack of any specific standard, the coefficients reported (.75 to .85) seem to be high enough to indicate that the examination may be regarded as probably reliable.

The association reports that no studies of the validity of the examination have been made. The examination may or may not be valid, but whether or not it is valid, it is necessary to achieve a passing score on it before becoming a registered occupational therapist.

After the examinations are scored at the association office the decile and quartile scores are forwarded to the colleges for dissemination to the individuals concerned. The decile scores were used in the present study. The mean of the decile scores used was found to be 4.66 and the standard deviation was 2.51.

Statistical treatment. Scatter diagrams were plotted from the date of the study and examined to determine linearity. The bi-variant distributions appeared satisfactory and Pearson product-moment correlations were computed. As indicated by Table IV the following relationships were obtained:

1. Performance in required college subjects, as measured by course grades, and performance on-the-job during clinical training, as measured by the standard rating scale, for each of the four fields of clinical training.
2. Performance in required college subjects, as measured by course grades, and over-all performance on-the-job during clinical training, as measured by the standard rating scale, when the ratings for the four fields of clinical training were combined.
3. Performance in required college subjects, as meas-

THE RELATIONSHIP BETWEEN REQUIRED COLLEGE COURSES AND PERFORMANCE ON* THE JOB COLLEGE COURSES AND REGISTRATION EXAMINATION AND PERFORMANCE ON THE JOB AND REGISTRATION EXAMINATION (N=104)

Clinical Affiliations	College Courses							
	O.T. Crafts	Science Bio	Lab. O.T.	Theory O.T.	Info. Med.	Rec. Soc.	Socio.	Registration Examination
Tuberculosis	.02	.01	—.01	—.01	—.07	—.08	—.10	.06
Orthopedics	.33**	.07	.17	.21*	.22*	.07	.14	.23*
Psychiatry	.06	.27**	.15	.10	.16	—.07	.02	.34**
Pediatrics	.28**	.14	.12	.11	.19*	—.07	—.02	.08
Composite Ratings	.17	.21*	.09	.06	.14	.01	.10	.23
Registration Examination	.16	.45**	.37**	.46**	.64**	—.04	.40**	

*Significant at the 5 per cent confidence level
**Significant at the 1 per cent confidence level

Table IV

ured by course grades and performance on the registration examination, as measured by score received.

4. Performance on-the-job during clinical training, as measured by the rating scale, for each of the four fields of clinical training, and performance on the registration examination, as measured by score received.

5. Over-all performance on-the-job during clinical training, as measured by the rating scale, with a composite rating for the four affiliations, and performance on the registration examination, as measured by score received.

RESULTS

Table IV presents the intercorrelations obtained. The relationships between required college courses and performance on-the-job, college grades and the registration examination, and performance on-the-job and the registration examination are given. The results obtained will be presented in three parts; on-the-job performance and the registration examination.

On-the-job performance and college grades. Grades in occupational therapy craft courses predict performance on-the-job during clinical training in orthopedics as indicated by a relationship $r = .33$, and during training in pediatrics where the relationship was found to be $r = .28$, both of which are significant at the 1% level. Grades in crafts courses do not predict performance during training in tuberculosis where the relationship was found to be $r = .06$, or over-all performance where the relationship found was $r = .17$, none of which is significant.

Grades earned in required biological science courses predict performance on-the-job during the psychiatric affiliation where a relationship of $r = .27$, significant at the 1% level, was found, and over-all performance where a relationship of $r = .21$, significant at the 5% level, was found. Biological science course grades do not predict performance during clinical training in tuberculosis where a relationship of $r = .01$ was found, or during pediatrics where a relationship of $r = .14$ was found. Neither of these relationships is significant.

Grades earned in occupational therapy laboratory courses do not significantly predict on-the-job performance for any of the four clinical affiliations, or over-all performance. Table IV shows the low relationships which are found, none of which are significant.

Grades in occupational therapy theory were found to be significantly related to on-the-job performance in one field of clinical training. For orthopedics a correlation coefficient of $r = .21$, significant at the 5% level, was found. In tuberculosis, psychiatry, pediatrics and over-all performance, the relationships found were not significant.

Grades in medical information courses were found to predict performance on-the-job at the 5% level for two affiliations of clinical training; for orthopedics $r = .22$ and for pediatrics $r = .19$. For tuberculosis, psychiatry, and over-all performance the relationships to medical information courses were not significant.

Grades earned in the social recreation course do not predict on-the-job performance for any of the four affiliations or over-all performance during clinical training. All relationships found were not significant.

Sociology grades do not predict performance for any of the clinical training affiliations, or over-all performance during training. No relationship of significance was found.

College grades and registration examination. Performance on the registration examination is significantly related to most of the required college courses. However, two courses do not predict performance on the examination as will be noted from Table IV. The relationship between occupational therapy craft grades and performance on the registration examination is not significant, nor is the relationship between grades in social recreation and registration examination score significant.

The college courses which predict performance on the registration examination with correlations which are significant at the 1% level are: biological science, $r = .45$; occupational therapy laboratory, $r = .37$; occupational therapy theory, $r = .46$; medical information, $r = .64$; and sociology, $r = .40$.

On-the-job performance and registration examination. Performance on-the-job in two of the clinical training affiliations significantly predict performance on the registration examination and two do not. Clinical affiliations which do not predict performance on the registration examination are tuberculosis and pediatrics. Clinical affiliations which do predict performance on the registration examination are orthopedics, where $r = .23$, significant at the 5% level, was found; psychiatry, where $r = .34$, significant at the 1% level, was found; and over-all performance, where $r = .23$, significant at the 5% level, was found.

DISCUSSION OF RESULTS

The predictors used in the present study, college course grades, should be viewed from the perspective of only partial cues to performance on-the-job. Thorndike[7] made the statement, "It must be recognized that performance during training and grades as an index of that performance, are only partial cues to eventual success in that job." This statement may very well be applied to the results of the present study and perhaps it might indicate that the grades used as predictors of on-the-job performance are of more importance than indicated by the results

obtained. That more than knowledge goes into performance on-the-job is accepted without question. No attempt to determine other ingredients of on-the-job performance was made. Burt[1] holds that it is not only what an individual can do but what he will do that determines to a large extent the relationship between performance on-the-job and any predictor. This is certainly applicable to college grades and on-the-job performance. Then, of course, the fallibility of grades, as predictors, and of rating scales, as performance indexes, must not be overlooked. The many possible sources of error and the assumptions that had to be made will be discussed later.

The results obtained indicate that on-the-job performance can be predicted from grades in some required college courses and cannot be predicted from grades in other required courses. The results for the registration examination are the same. Grades in some courses predict performance and some do not. Likewise performance on the registration examination may be predicted from performance on-the-job during some clinical training affiliations, but for some clinical affiliations no significant relationship was found.

CONCLUSIONS AND SUMMARY

From the results of the present study it is concluded that on-the-job performance during clinical training, and performance on the registration examination for occupational therapy students may be predicted from performance in some required college courses. However, performance in other required college courses does not predict on-the-job performance or performance on the registration examination. Likewise, on-the-job performance during some clinical training affiliations does not predict performance on the registration examination, but performance during other clinical training affiliations does predict performance on the registration examination.

For the subjects of this study it is concluded:

1. On-the-job performance during clinical training in tuberculosis cannot be predicted from performance in college courses.

2. On-the-job performance during clinical training in orthopedics may be predicted by low but significant relationships from college grades in occupational therapy crafts, occupational therapy theory and medical information courses.

3. On-the-job performance during clinical training in psychiatry may be predicted from biological science course grades by low but significant relationships.

4. On-the-job performance during clinical training in pediatrics may be predicted by low but significant relationships from craft and medical information courses.

5. Over-all performance during clinical training, as measured by combined ratings, may be predicted by low but significant relationships from biological science course grades.

6. Performance on the registration examination may be predicted from biological science, occupational therapy laboratory, theory, medical information and sociology grades, and from performance on-the-job during clinical training in orthopedics, psychiatry and over-all performance. The relationships between the examination and course grades were low but significant. The relationships between the examination and on-the-job performance were low to moderate.

The purpose of the study being reported was to (1) investigate the predictive value of performance in required courses, as measured by college grades, for on-the-job performance during clinical training, as measured by the standard rating scale used by all institutions approved for training students; (2) to investigate the predictive value of performance in required courses, as measured by college grades, for the national registration examination, as measured by score received on the examination; (3) to investigate the predictive value of performance on-the-job during clinical training, as measured by the standard rating scale, for the national registration examination, as measured by score received on the examination, for occupational therapy majors.

Subjects for the study were 104 graduates of San Jose State College majoring in occupational therapy. 99 were women and 5 were men. College course grades were translated into numbers and correlated with total score received on the rating scale and the decile score received on the registration examination. Total scores on the rating scales were correlated with the decile scores of the examination.

Under each of the three conditions noted in the first paragraph, certain course grades were found to be significantly correlated with the criteria. Some course grades were found to have correlations with the criteria which were so low as to be of no value in prediction.

ACKNOWLEDGMENTS

The helpful suggestions, criticisms and constant encouragement of Dr. J. T. Rusmore, under whose direction this study was carried on, is gratefully acknowledged.

Sincere thanks are also extended to Dr. E. W. Minium and to Miss Mary D. Booth, O.T.R. for their assistance and cooperation.

(Continued on page 107)

THE DEVELOPMENT OF A PROSTHETIC INFANT HAND*

ROSEMARY SPERRY, O.T.R.

INTRODUCTION

Congenital malformations involving absence or deformities of the extremities have long been recognized as a problem by the medical profession, but they have only begun to receive attention in the past decade.

The child amputee research programs operating today are an outgrowth of the work originally started by the advisory committee on artificial limbs of the National Research Council. After 1952, when some of the major prosthetic problems had been worked out for the adult amputees, the leaders of the national program began to consider ways and means of extending the benefits of the adult program to the welfare of children.

In March of 1955, the University of California at Los Angeles formed a program of child prosthetics under the title, Child Amputee Prosthetic Project. This was operated under the joint sponsorship of the department of pediatrics of the school of medicine and the department of engineering. It was closely associated with the artificial limbs project, also located at the University of California.

THE STUDY

Purpose of the study. It was the purpose of this study to make an intensive evaluation of the needs of one infant congenital bilateral upper extremity amputee, and in view of these needs, to design and build an infant prosthetic hand. It was the further purpose of the study to evaluate the resultant prosthetic hand in terms of the infant's needs.

Importance of the study. Research related to upper extremity infant amputee equipment is lacking. The need for it becomes apparent when the statistical data concerned with this problem are investigated. In the United States, in the year 1955, approximately five million children were born. Chittenden reports that it can be expected that 1,760 of these children will be lacking one or more limbs.

The occurrence of malformations at birth has been thought to be the result of some defect in the germ plasma, and thus hereditary. Recent clinical data that the hereditary hypothesis is not a sufficient explanation of these disorders, and the concept of environmental determination has evolved. If proved true, this concept provides hope for prevention of these tragic accidents.[12]

CONSIDERATIONS IN THE DESIGN OF AN INFANT PROSTHESIS

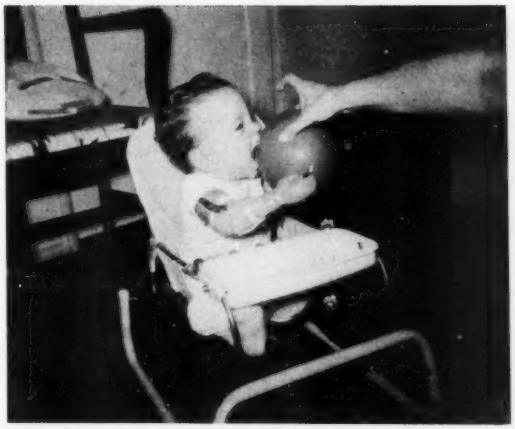
Physical considerations. There are many things to be considered in developing upper extremity prostheses for children. Of major concern is fitting the growing youngster with prosthetic equipment. Aitkin assures us there has been much query and debate relative to the best time for fitting a prosthesis to a child. Serious errors have been committed by assuming that the rapidly growing child could get by with crutches or an empty sleeve until he reached a relatively late stage of maturity.[1]

Chittenden reminds us that the greatest growth in a child occurs in the first year of life. The total anticipated linear growth is not a reliable guide, because growth in the head, neck and trunk does not contribute to the artificial limb fitting difficulty.[8] Campbell, prosthetist at the Child Amputee Prosthestic Project, University of California at Los Angeles, has reported that prostheses made for infants last for periods of approximately six months before adjustment or a new fitting is necessary.[5]

According to Gottlieb, fitting a child successfully with a prehension device in contrast to a passive device depends on the site of amputation, the ability of the child to learn to co-ordinate flexion of the humerus with stabilization of the opposite shoulder, and the ability of the child to perceive depth and shape of an object he is to prehend.[9]

Emotional considerations. In the early stages of child prosthetic development Aitkin, Chittenden and Kessler, pioneers in child amputee work, seemed to agree that a youngster was emotionally ready for upper extremity prostheses somewhere between the ages of four and five. Kessler had shown concern with the major social adjustments the child has to make at school and in play. He suggested that a prosthesis at that age might lessen the harshness with which the amputee was treated by his classmates.[10] Aitken stressed the importance of sufficient maturity in the child to tolerate and successfully operate a prosthesis, and he has envisioned the child of four as being

*An abstract of a thesis presented to the faculty of the graduate school of the University of Southern California in partial fulfillment of the requirements for the degree of Master of Arts in occupational therapy.



Illustrates use of the UCLA infant hands in bilateral clasp.

ready to listen to reason and capable of taking instructions.[1]

Both Aitken and Bechtol have suggested that children of one and two years be provided with a rubber mitten, curved and sized to the normal member, to allow for bottle holding or other activities commensurate with the child's age.[1,3]

SELECTING A DESIGN

Physical considerations. Early in 1955 the Child Amputee Prosthetic Project began to fit some of the amputee infants six to twenty-four months of age with conventional upper extremity prostheses and infant hands. The staff members of the Project felt that: "Infant hand activity is limited to palmar clasping of objects

Illustrates position of the UCLA infant hands in crawling.

between the hands. The maturational stage of digitation has not yet been reached, nor can the coordinations of shoulder and arm necessary to terminal device operation be managed. For these reasons a passive hand is essential for the infant."[4]

Emotional considerations. In designing the infant hand, the staff of the Artificial Limbs Project discouraged the idea of reproducing the human hand. It was thought that the transition from a beautiful hand to a metal hook might present an adjustment problem for the parents and the child. Therefore, an abstract form, shaped similar to a scoop, was designed to permit two-hand cup and glass holding and allow the infant to draw objects and toys toward him. It was hoped that the abstract form would help orient the parents and child toward the eventual use of a hook.[2]

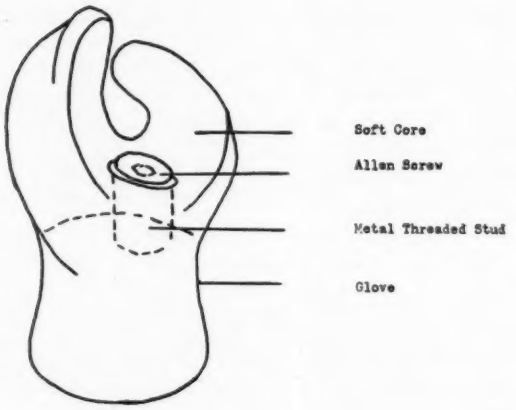
CONSTRUCTION

The original hand was constructed of aluminum which was dipped in a polyvinyl solution to form a skin-like covering. The metal not only proved to be too heavy, but it cut through the vinyl glove and furnished the infant with a dangerous prosthetic device.

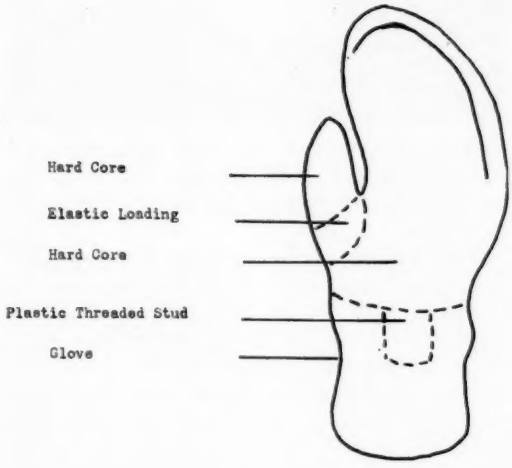
Illustrates use of experimental hands in adaptive behavior.

The abstract form was elaborated, and the new shape appeared to be similar to that of a mitten with a slit between the thumb and palm. The mitten-like fingers assumed a slightly flexed position. The basic construction consisted of parallel-oriented glass threads in plastic as a core, with a threaded plastic stud for attachment to the socket at the wrist unit. The core was then covered with a flexible polyvinyl coating colored to match the skin. The combination of resinous core and vinyl covering produced a light non-hazardous terminal device.[2]

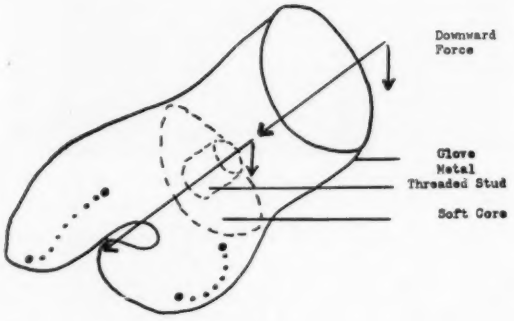
Slight changes have been made from time to time in an effort to improve the function of the UCLA infant hand. One of the most important changes occurred when the thumb separation was deepened and articulation was provided in the thumb under elastic loading. This permitted some flexibility in the thumb, causing a passive pinch between the thumb and the radial side of the hand. The ulnar side of the hand was curved radially to allow for more surface contact when the child was using both hands to



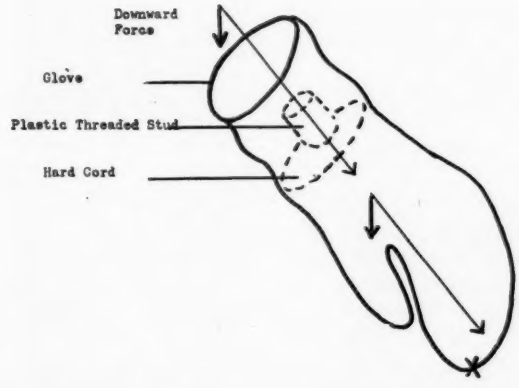
← *Experimental infant hand, lateral view, showing clamp grasp and hand rotation adjustment.*



→ *Revised UCLA infant hand, anterior view, showing wedge grasp. Hand rotation controlled by insertion of washers over stud.*



← *Experimental infant hand in support and crawling position. Area of surface contact indicated by dotted line.*



→ *Revised UCLA hand in support position. One point surface contact indicated by X.*

Diagrams of Prosthetic Infant Hand

hold an object. This later model is referred to in this paper as the revised UCLA infant hand.

THE IMPORTANCE OF THE PROSTHESIS

Fitting an infant with a prosthesis has psychological significance as well as functional significance. It has been done in an effort to help the child attach value to the prosthesis at a very early age, accept it as part of the body image, and gradually incorporate it into the self concept.[7]

Illustrates use of the experimental hands in adaptive behavior.

The Child Amputee Prosthetic Project has been fitting congenital below elbow amputees six to twenty-four months of age with prostheses. The prosthesis consists of the UCLA infant hand and wrist unit, forearm socket, elbow hinge joint, upper arm cuff, and a figure-eight harness. In some instances the soft core model of the infant passive hand developed by the Army Prosthetic Research Laboratory was used for comparative study.[4] The parents were instructed to place the prosthesis on the child during waking hours and attempt to increase his prosthetic tolerance.[6]

As the child begins to react to his environment through touching and moving objects, functional value is attached to the prosthesis. At this stage, we may assume that the child is beginning to perceive the prosthesis as a part of the body image. From this we may expect the child to be in a better position to incorporate the prosthesis into the self concept as he develops.

It is hoped that such problems as social adjustment and acceptance of the prosthesis may be reduced as a result of early prosthetic fitting. Research in this area is in the very beginning stages. It will take years to determine the value of these assumptions.

THE CASE STUDY

In order to evaluate the factors which were important in the design and use of an infant prosthetic hand, an intensive case study was made of one congenitally deformed infant with bilateral short below elbow amputations. According to Chittenden, this is a common level of amputation and is considered to be one of the most prevalent congenital deformities treated by the Child Amputee Prosthetic Project.[11,4]

The subject selected was a white male, six months of age at the beginning of the study. Observations of this child spanned a nine month period.

The information used in this study was drawn from: (1) daily observation notes written during the initial prosthetic adjustment period and frequent intervals thereafter; (2) personal interviews with the mother; (3) the use of a standardized developmental test; (4) photographic records recording the different stages of motor development and the subject's ability to control the prostheses in purposeful behavior.

Diagnosis. At birth the subject exhibited congenital malformation of all four extremities. He made his first appearance before the Child Amputee Prosthetic Project conference at the age of fourteen weeks. The X-rays revealed bilateral short below elbow amputations. There were no apparent abnormalities of the shoulder, shoulder girdle, and spine. Both femora were foreshortened; the left was definitely dislocated, the proximal end broadened and irregular in shape. The left leg showed a single bone, presumably the tibia. Below this was a single metatarsal. The head of the right femur was slightly irregular in shape and seemed to be a little below the acetabulumn. The right leg and foot showed no abnormality.

Illustrates use of experimental hands in motor performance.

The infant appeared before the conference again at twenty-eight weeks of age. Bilateral upper extremity prostheses with the UCLA infant passive hands were recommended.[1]

Prostheses. The prosthetist made an impression of both arms and a check socket to determine fitting modifications. One month later the prostheses were completed and the final fitting was made on the subject. The most difficult fitting problem, which could not be completely remedied at that time, concerned the shortness of the stumps. The right stump measured one and three-fourths inches and the left stump one and one-half inches. For this reason the forearm component had to fit close to the elbow joint. As the subject flexed his forearm, rolls of baby fat wedged their way in between the elbow joint and the forearm, thus preventing maximum flexion. Any modification of the forearm component would sacrifice the stability of the stump in the socket. Aside from this difficulty, the prosthesis fitted satisfactorily. The subject did not openly object to the limb substitutes and the additional arm length seemed to improve his physical appearance.

HOME PROSTHETIC ACTIVITY

Fitting an infant with upper extremity prosthetic equipment was in the early stages of development at the Project and for this reason training procedures had not been established. The occupational therapist requested the parents to put the limb substitutes on the subject several times each day and note his ability to use the prostheses in bilateral clasp.[6]

The training program emphasized building up prosthetic tolerance rather than encouraging any particular activity. Prosthetic training periods were tentatively scheduled for mornings, afternoons and evenings. Either the mother or the father and the two and a half year old daughter pleasantly diverted the subject with activity and rhythmical children's recordings. The total prosthetic activity periods seldom exceeded three hours a day. This allowed the infant ample opportunity to investigate through tactile procedures.

Because of the mother's careful structuring of training sessions around the subject's disposition, fear and dislike of the prostheses did not develop. Following the initial month of prosthetic adjustment, training schedules often included meal time to help the subject associate the wearing of the prostheses with the pleasant experience of eating.

The forty week infant developmental examination revealed a close correlation between the behavior in the normal child and that elicited in the subject without his prostheses. This implied that his development level closely paralleled his chronological age—an important factor to consider for early prosthetic training.

DESIGN AND CONSTRUCTION

The experimental infant hand was designed to fulfill the needs derived from the case study of a bilateral short below elbow amputee with gross lower extremity malformation. Four major features were incorporated into the design.

Flexible core. The flexible core was fundamental in providing the subject with a safe, nonhazardous prosthetic hand. The pliability of the core had to be tempered to allow passive prehension in the thumb and slight hyperextension in the mitten fingers to permit functions of pinch and body support.

Passive prehension. In order to furnish the subject with a more stable pinch, a three point contact was established by having the thumb arise from the proximal radial side of the hand, advance outward in a radial direction, then curl back to contact the radial palmar surface of the hand about one-half inch lower than the tip of the mitten. Curling of the thumb provided greater surface contact around the object passively held in the infant hand. The pinch was further strengthened by inserting a strip of spring metal into the thumb.

Palmar support. In order to gain a stable support for the subject, a wrist component was eliminated and the distal end of the prosthesis was fitted directly inside the prosthetic infant hand. Consequently, when weight was placed on the palmar surface of the hand, the distal portion of the prosthesis contacted the surface, cushioned only by the quarter-inch thickness in the palm. As weight was placed on the heel of the hand, the fingers were forced into slight hyperextension, thus furnishing the subject with a broad stable palmar surface similar to that found in the normal hand. As a result of incorporating the distal end of the prosthesis into the structure of the hand, the length of the entire artificial arm was shortened and allowed better hand-mouth contact for the subject..

Hand rotation adjustment. Rotation in the experimental infant hand was necessary for positioning the hand in spoon feeding. A firm joining of the hand to the distal end of the prosthesis was accomplished by inserting a thin beveled flat headed one-inch screw directly through the palm into the prosthesis. This screw was set by an Allen wrench. By attaching the hand to the prosthesis in this manner, hand rotation was possible without risking the security of the hand on the prosthesis.

CONCLUSIONS

It was the purpose of this paper to relate the processes involved in designing and constructing an experimental infant hand based on the needs of one congenitally malformed infant born with bilateral short below elbow amputations and gross lower extremity deformities. The factors important in the design and construction of the experimental infant hand, as determined through observations, parental interviews, developmental tests, and photographic studies were:

1. Firm passive prehension between the thumb and hand to permit spoon holding for early development of the self-feeding patterns.
2. Broad palmar surface to furnish support for body weight during postural activities.
3. Soft core for prevention of accidents to subject, sibling, and others.

The experimental infant hand provided a firm stable pinch which allowed the subject to advance from the preliminary self-feeding of Zwieback to the self-spoon feeding behavior when he was developmentally ready.

The development examination records revealed that the subject was capable of a higher level of motor performance without the prostheses and infant hands than with the prostheses and the experimental or the revised UCLA infant hands.

In direct contrast, self-spoon feeding could only be accomplished with the prostheses and the experimental infant hand. Since self-feeding appeared to elicit more purposeful prosthetic performance than other activities, and because of its importance in activities of daily living, the training schedule was revised so that prosthetic activity would be incorporated into the eating schedule. The new schedule firmly established the prosthetic routine into the mother's busy day. Ample time for the subject to engage in other activities was permitted either before or after the meal.

Self-feeding by means of the experimental infant hands attaches value to the prostheses. This may lead to early acceptance of the prostheses into the body image and place the subject in a good position to gradually incorporate the limb substitutes into his self concept.

Neither the broad palmar surface of the experimental infant hand nor the rigid point contact of the revised UCLA infant hand was utilized for body support when the subject assumed crawling or sitting positions. Instead, weight was placed on the flexed prosthetic forearms. The subject was observed to support some of his body weight on one palmar surface of the experimental infant hand when he reached for something with the other hand. This occurred in both the prone and sitting posture. Perhaps this form of support would have been more useful to the subject if it had been available when he was developmentally ready to support himself with his arms.

The developmental examinations revealed an equal motor performance in bilateral clasping of objects with the revised UCLA infant hands and the experimental infant hands. Both demonstrated improvement with maturation.

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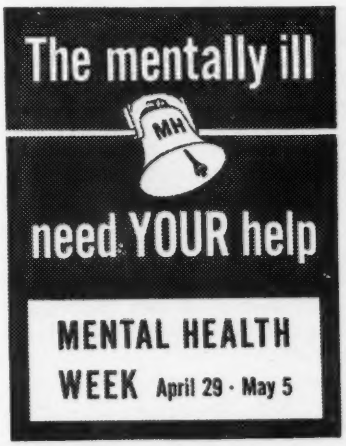

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Have You Tried?

The latest "do-it-yourself" item for the physically disabled is a new device for putting stockings on and pulling them up into place. It's called STOCKING - AID (patent applied for) and has been especially designed to help those who are unable to bring the extremities of their limbs into contact with their hands.

The new aid, a product of Fascole Corporation, is particularly useful to women for pulling on nylon hose with no danger of tearing or snagging. The accompanying photograph shows a hospitalized patient using the device.

According to the inventor, patients can familiarize themselves with its simple operation in a very short period of time. A complete set of instructions comes with the STOCKING-AID, which clearly describes the few easy steps to help patients help themselves into any pair of stockings.

For patients too weak or ill to be transferred to a Tilt Table, Franklin Hospital Equipment Company has designed a TILT BED. It is adjustable in any position between horizontal and 90° without any movement from its location.

* * *

A set of six carefully authenticated pieces taken from New England museums and private homes has been selected by X-acto, Inc., and made available in new "do-it-yourself" kits.

X-ACTO COLONIAL ANTIQUE KITS are complete in every detail. For easy assembly, all the component wood parts are precisely pre-cut, shaped and grooved. The nail holes are started so that even a child can put together a piece quickly and accurately. For antiquing and finishing, an X-acto replaceable blade knife, a simple rub-on stain, sandpaper, steel wool, gauze and other accessories are provided. No tool other than a little hammer is needed to complete a project; the pieces can be assembled and finished on a kitchen table.

Also included in each kit is a six-page leaflet giving easy-to-follow instructions for assembly, antiquing and finishing as well as the historical background of the piece.

* * *

Many long term patients wish to continue their education during their hospitalization. Since their interests are many, occupational therapists will find the DIRECTORY OF PRIVATE HOME STUDY SCHOOLS of value in choosing a course designed for each patient's interest. This directory is available from the National Home Study Council.

* * *

A compilation of available reading aids from all publishers is combined into a source book of good materials called REMEEDI-AIDS and available through Remeedi-Aids Service. If you have encountered reluctant readers, this source book will prove helpful.

* * *

The new TOMAC FOLDING INVALID WALKER is one of the many valuable ambulation aids distributed by Rehabilitation Products, a division of American Hospital Supply Corporation.

For a complete list of the company's products,

send for their 150 page catalog designed to be a complete source book for rehabilitation equipment.

* * *

To encourage the physically disabled to "do it themselves," a new longhandled toothbrush has just been introduced by Fascole Corporation. It goes under the trade name of X-TEND and has been specifically designed to help those with limited range of motion in arms, shoulders, or hands to brush their teeth.

The new X-TEND toothbrush is 16 inches long, exclusive of the adjustable brush attachment. It has a variable connection at the top so that the toothbrush attachment can be adjusted at any angle desired, and is made of tubular aluminum with a special safti-grip handle.

* * *

A new product of the International Chemical Company is DURA SEAL, a one-coat finish for all woods. Brush it on, let it soak into the wood, then wipe off the excess with a cloth. When dry, polish with Dura Top Wax. Comes in ten modern tones.

* * *

A buckle that does not depend on holes in the strap for an exact and easy adjustment will appeal to occupational therapists dealing with handicapped patients. It is put out by the PARVA BUCKLE COMPANY and works on the principle of a double slide at one end.

* * *

LILY JUTE-TONE is the name of the imported jute yarn for making woven, hooked, crocheted, tufted or braided rugs, place mats and handbags, which is put out by Lily Mills. It is available in sixteen beautiful soft colors.

* * *

Indian-style MOCCASIN KITS can be obtained in three colors, ready to assemble without the need for tools, from the J. C. Larson Company. The price is very reasonable and there is a discount for orders of a dozen or more pairs. Holes are pre-punched and lacing is included. Trim is in contrasting color.

Therapists will find the BOSTICH B & S SADDLE STAPLER of great help in binding booklets or repairing magazines, as it will staple through fold of pages up to 12 inches wide and will bind from 2 to 32 sheets.

* * *

An electric toy lathe, the MECHANIC MAKER, put out by the Winkle Manufacturing Company, turns woods, soft plastics and soft aluminum with ease. There are 1001 items that can be made with this table model which looks and works like a big lathe.

* * *

The S & S LEATHER COMPANY is now selling tooling calf and goat remnants by the pound at a price that will save the occupational therapist more than half her regular costs for similar leather bought by the foot. The remnants contain large pieces from which full billfolds, coin purses, and similar items can be made.

* * *

Looking for a particular product? Chances are you will find it in the complete Supply Catalog Number 578 offered by *J. L. HAMMETT COMPANY* who are suppliers for occupational therapy and industrial art.

* * *

The *FLO-MASTER* felt tip pen produces effects that resemble the work of an India ink pen, a drawing pencil, charcoal, and even an artist's brush. Use it for charts, maps, graphs, parcel post, display cards or visual education. *FLO-MASTER* is a product of the Cushman & Denison Manufacturing Company who offer a complete catalog and art bulletin on the varied uses of the pen.

* * *

Looking for ideas? Write for the new Catalog Number 67 published by *ART HANDICRAFTS COMPANY* which includes a complete line of leathercraft and supplies.

* * *

J. A. Preston Corporation is now offering a new PC 5033 *JAMAR ADJUSTABLE DYNAMOMETER.* Handgrips are effectively shaped to fit the contour of the hand and distance between them is variable in six different positions. Uses a sealed hydraulic system with a sensitive gauge registering force in pounds from 0 to 200 pounds.

GUIDE FOR COMMITTEES

Herewith is a copy of the statement of procedures for committees which was formulated by the special committee on standard operating procedures for committees. This was approved by the Board of Management of the American Occupational Therapy Association at its annual conference in Minneapolis in October, 1956.

The statement was prepared with the hope that it might serve as a guide to unify committee organization and functioning. It is planned to use this for approximately one year, and then to evaluate it and make any necessary revisions.

REPORT ON THE SPECIAL COMMITTEE ON STANDARD OPERATING PROCEDURES FOR COMMITTEES

I. Purpose of the committee

A. To establish basic operating procedures for all committees.

B. To request chairmen of all standing committees to present standard operating procedures for their committees.

The present standing committees are as follows:

Executive
Nominating
Registration
Education
Special studies
Clinical procedures
Legislative and civil service
Permanent conference
Recruitment and publicity
Awards
History

II. Relevant prior action

In 1947, the committee on rules and procedures, Mrs. John A. Greene, Chairman, drew up a chart of organization of the American Occupational Therapy Association.

This was followed in 1949 by a compilation by the same committee under the chairmanship of Sister Jeanne Marie of the *History of Service* of each of the six standing committees. Instruction sheets for committee chairmen were prepared. These were called (1) *Imperatives on Integration*; (2) *Suggestions for Improved Channeling of Committee Reports through National Office.*

The committee on rules and procedures recommended that (1) the histories of service of Association committees be printed in the American Journal of Occupational Therapy and (2) the instruction sheets be sent to committee chairmen by the president at the time of their appointment or re-appointment and that the practice be continued until their usefulness had been proved or modification indicated and that after due time the most adequate instructions be referred to the constitution committee for consideration relative to inclusion in some appropriate part of the constitution. The committee was dissolved after making this report.

In 1953, Miss Wilma West, at that time executive director of the American Occupational Therapy Association, presented to the Board of Management a thorough study of the committee structure and relationships of the American Occupational Therapy Association.

III. Basic premises

With the growth of the American Occupational Therapy Association and the increasing complexity of its operation, it is obvious that good organization is necessary in order to accomplish the work of the Association expeditiously and effectively.

Certain basic premises must be observed if the committee method is to be successful. These may be stated as follows:

A. The National office must have the most adequate and capable staff within the means of the Association to procure.

B. Committee organization must involve the largest possible number of persons so that:

1. Maximum interest is aroused in the affairs of the Association.

2. The burden of work is distributed so that few do not carry the whole load.

3. The Association may receive the benefit of the knowledge and thought of as many persons as possible.

C. Geographic distribution is of great importance because of the size of the country and difficulties and delays in communication; therefore, committees should be appointed with due regard to geographic representation.

1. If they meet at stated intervals they should have as wide geographic representation as possible (for example: the committees on schools and curriculum, student affiliations and graduate study).

2. If they are appointed for special projects they should consist of persons who can meet with relative ease, therefore, quite closely related geographically.

3. Standing committees (save for those mentioned) should be located in different parts of the country and may follow the patterns suggested in "2" above.

D. Participants in committees should be able and willing to give both personal and professional time and effort and should agree to complete the assignment.

E. Financial needs of committees should be given all possible consideration.

1. Members of all committees should know:

a. How much they must contribute personally.

b. How much money may be available through state or national resources.

c. What services are available (mimeographing, mailing, typing, etc.) through national or local sources.

2. Committees which meet regularly more than twice a year (registration) should receive remuneration for travel expenses.

3. Committees functioning under grants for special projects should have available sufficient funds to insure:

a. Opportunity to select the best committee participants without regard to geographic distribution.

b. Adequate remuneration in salary, stipends and/or expenses for those persons most involved who give time and effort, both personal and professional, beyond the reasonable demands of voluntary service.

F. Good communication must exist between committees and the national office to:

1. Enable the national office to

a. Conduct as much interim business as possible.

b. Have at all times the most accurate and complete knowledge possible of actions transpiring throughout the country.

2. Enable the committees to

a. Fulfill assigned function and avoid duplication of committee action.

b. Ascertain relevant action of previous committees.

c. Clarify own function in the case of special committees (short-lived and having no specific SOP)

IV. Standard operating procedures for all committees

A. Establishment of committees

1. The executive, registration and nominating committees are established by the constitution.

2. Standing and special committees are established by direction of the Board of Management and may be continued or disbanded at the discretion of that body.

3. The House of Delegates has the prerogative of establishing special committees.

4. All committees have the prerogative of establishing special or subcommittees.

B. Charging of committees. It is the responsibility of the establishing body to

1. State clearly the purpose and function of the committee.

2. Outline its duties, responsibilities and prerogatives.

3. Indicate, if desired, the size of the committee.

4. Recommend to the treasurer and the Board of Management the setting up of a budget for committee use.

5. Transmit charge to the appointed chairman.

C. Committee membership

Selection of all members should be on the basis of capability, knowledge of the particular project to be accomplished, willingness and ability to serve and to contribute both personally and financially, and geographic location.

1. Chairmen

a. Chairmen are appointed by the president unless otherwise directed by the Board of Management or provided by the constitution.

b. Special committees

Chairmen are appointed by the presiding officers of the appointing body.

2. Members

Members of committees should be appointed by the chairman with such advice as may be desired from the president or executive director.

D. Responsibilities of the national office to all committees.

1. To provide each committee chairman with all possible knowledge of previous work which relates to the project involved.

2. To render all possible assistance in advice or clarification of the project.

3. To indicate clearly the amount of possible service (secretarial, duplicating, mailing, etc.) which the national office can provide.

4. To disburse any funds involved in the work of the committee.

5. To indicate times when reports should be presented; to collect the reports for file or transmission to all persons concerned.

6. To maintain accurate lists of committee members and present them for publication in AJOT.

7. To arrange annually for re-appointment or change of chairmen and committees.

E. Responsibilities of the chairman

1. To comprehend the problem, be interested in its solution and be willing to work it through. Acquaint himself with the history of the committee or previous work done on the project.

2. To select the designated number of committee members and obtain their agreement to serve. Approximately one-half of the members should be experienced, the remainder should be newer persons.

3. To report the names and addresses of committee members to the president and the executive director.

4. To submit to the president and the executive director a tentative program and schedule of proposed action.

5. To schedule the meetings of the committee

a. at the annual or midyear meeting.

b. at local places and periods.

6. To inform and instruct the members as to the purpose and aims of the committee, keeping them as concrete as possible.

7. To divide the work to be done among the members

a. Specify the duties of each member

b. Specify duties of any subcommittees and assist and clarify in every possible way.

c. Maintain contact between members by minutes of all meetings, correspondence and/or personal discussion.

d. Re-define purposes as need arises.

f. Re-assign duties as circumstances may require.

8. To prepare a complete report of all actions and recommendations of the committee.

a. The report should be sent to the executive director for

(1) Transmission to the president

(2) Transmission to the Board for further action

(3) Transmission to all other persons concerned.

b. Two copies should be retained in the national office

(1) One for the permanent file.

(2) One to be made available for study on request.

c. There should be a statement of Board action on recommendations submitted.

d. The report should be presented by the chairman of each standing committee at the annual and/or midyear meeting.

e. The report should include

(1) A list of committee members.

(2) Report of work done by each member as well as that done by the group as a whole.

(3) Proposed procedures which may further facilitate accomplishment of the work assigned.

9. To prepare a condensed report of the action and recommendations of the committee for publication in AJOT.

10. To prepare a tabulated report of salient actions with references regarding publication to be added to the "History of Services of Standing Committees."

11. To point out any duplication or conflict with other committees and to recommend steps for solution.

12. To recommend continuance or dissolution of the committee depending upon the degree of accomplishment of the project.

13. To submit resignation at the time of the annual meeting, unless term of office has been otherwise specified, so that the appointment body may be free to make such changes or re-appointments as may be desired.

F. Responsibilities of committee members

1. To cooperate in carrying responsibility assumed to its satisfactory conclusion

2. To attend all meetings if possible

3. To carry out all assignments promptly

4. To seek advice and clarification when necessary

5. To submit to the chairman written reports of work accomplished, personally or in subcommittees, action taken and recommendations made.

RECOMMENDATIONS

The special committee on standard operating procedure makes the following recommendations:

1. That all committee chairmen should be given the list of procedures presented in this report and that careful check should be made of the efficacy of this guide with the idea of making it a permanent one.

2. That each standing committee should prepare and revise from time to time as need indicates a statement of its purpose and function and a SOP for its own guidance.

3. That copies of these SOP's should be available in the national office for the guidance and instruction of all new chairmen and committee members.

4. That conflicts in committee function should be referred to the executive committee for clarification and solution.

5. That this special committee be dissolved after the submission of its report to the Board of Management at the annual conference of the Association in Minneapolis, October, 1956.

Respectfully submitted:
Naida Ackley
Ethel Huebner
Clare Spackman
Helen S. Willard, *Chairman*

DELEGATES DIVISION

MARYLAND

Delegate-Reporter, Marianne Catterton, O.T.R.

The Maryland Occupational Therapy Association has always been conscious of its unique position in regard to occupational therapy history. We could not help being both proud and humble with Doctor Dunton contributing his keen wisdom and wit to our meetings as an active participant and Mrs. Henrietta Price always generously willing to offer us the fruits of her experience by serving us as an officer or on committees.

This past year we had an additional reminder of our past history as well as a great thrill. The rotogravure section of The Baltimore Sunday Sun published a picture accompanied by a story by Miss Winn of the reconstruction aides who worked at Fort Howard during World War I. Our alert program chairman, Sallie Jones, got together with our president, Lucy Morse and contacted all the women in the picture to invite them to our next dinner meeting. That meeting was a very exciting affair. Doctor Dunton and Miss Mary Thom, the only one in the group who has continued in active practice, had a fine time at this reunion. The rest of us were completely enthralled as we listened to stories of the infancy of our profession.

Most of us came away with more awareness of what we owe our "pioneers," and also feeling that we had been accorded a very special privilege.

OFFICERS

President.....Lucy Morse, O.T.R.
Vice-President.....Helen Schwedenberg, O.T.R.
Secretary.....Mary Shaw, O.T.R.
Treasurer.....Lillian Chong, O.T.R.
Delegate.....Marianne Catterton, O.T.R.
Alternate Delegate.....Elizabeth Grayson, O.T.R.

NEW YORK

Delegate-Reporter, Marie Louise Franciscus, O.T.R.

Inasmuch as the last resume of the activities of the New York Occupational Therapy Association was published in January, 1956, an effort has been made in this report to cover the calendar year rather than the fiscal year of the Association: January-May, 1956, and September-December, 1956.

The New York Occupational Therapy Association with 234 members in December, 1956, can look back at a year of hard work and many accomplishments. We have been fortunate in the excellence of our program meetings, planned wisely by the committees to cover a variety of subjects as well as variety in their presentation. The five meetings included the following: one planned and carried out by the students of New York University and Columbia University; one at the United Nations in conjunction with the Greater New York District, American Physical Therapy Association, on the subject of "Rehabilitation Around the World"; an all day meeting at the New York Hospital, Westchester Division; a coffee rally at Roosevelt Hospital to open the fall; and a meeting concerned with a demonstration of and description of two hand appliances.

In conjunction with the United Hospital Fund of New York and the Greater New York Hospital Association, a four day institute on pre-vocational evaluation was offered and was attended by fifty members. The ways-and-means committee, in an effort to raise money for scholarships, sponsored a two-evening workshop on ADL techniques which was attended by thirty-five and cleared $158.00. In addition to the above meetings, we have all received five interesting and informative issues of the bulletin.

Other business of the Association has been carried out through the careful and farsighted planning of our Board of Managers, through the fine assistance offered by our medical advisory committee and through the hard work of many members serving on the sixteen committees of the Association: Bulletin, Membership, Legislation, Nominating, Personnel Policies, Program, Publicity, Recruitment, Scholarship, Special Studies, Volunteer, Ways and Means, Insurance, Job Exchange, PT Liaison, Student Liaison.

Some noteworthy accomplishments of these committees have included: the forward movement of the district formation plan and the acceptance by NYOTA of a new constitution which provides for district organization; the acceptance by our membership of a group health insurance plan, carried by the Wholesale Health and Accident Plan, underwritten by the Massachusetts Bonding and Insurance Company; the beginning of an investigation of a plan to incorporate the Association; a volunteer course which graduated thirty volunteers for service in nineteen of our hospitals; newspaper and radio spots of organization activities; cooperation with other groups recruiting health personnel, as the Health and Welfare Councils of Manhattan and Queens, the Allied Medical Professions Career Information Committee, the Girl Scouts; recruitment literature was sent to approximately seventy-five high schools and one hundred students.

These are some of the highlights of our activities during the past year, and, although, for lack of space, it has not been possible to include all accomplishments, the scope of this report should be reviewed with justified pride by the many who made it possible.

OFFICERS

President.....Agnes Dick Ness, O.T.R.
First Vice-President.....Virginia T. Kilburn, O.T.R.
Second Vice-President.....Ella Westerman, O.T.R.
Recording Secretary.....Eleanor S. Owen, O.T.R.
Corresponding Secretary.....Doris Beasley, O.T.R.
Treasurer.....Fred Erb, O.T.R.
Assistant Treasurer.....Frances Heess, O.T.R.
Delegate.....Marie Louise Franciscus, O.T.R.

TENNESSEE

Delegate-Reporter, Nancy L. Rice, O.T.R.

The Tennessee Occupational Therapy Association is proud to be able to report that it is about to join the ranks of those state associations having scholarship funds. Our first venture in fund raising has been through the sale of key rings with the OT insignia imbedded in a plastic fob. The initial sales at the Minneapolis conference were far above our expectations and we wish to thank all of you who encouraged us by purchasing key chains. Though our assets are still too small for concrete benefits, a committee is working to establish scholarship policies for the future.

The outstanding recruitment project has been a joint project with various allied medical specialties. This is in the form of a local committee of the National Health Council with Dr. Douglas Sprunt of the University of Tennessee school of medicine as advisor. Ten specialties, including occupational therapy, were represented. The group unanimously agreed that the one common problem was lack of qualified personnel and therefore the first project was recruitment. A large, portable poster was devised, presenting each of the ten fields, with the slogan, "Take time to think about a health career." During the past academic year this poster, with literature and brochures, has made the rounds of the high schools. Response has been excellent and inquiries numerous. Through this and other recruitment efforts we know of three students who have entered occupational therapy schools this fall.

The main problems encountered by our association continue to be induced by our geographic distribution. There are 500 miles between the two large groups. In order to have the group together bi-annually it is necessary to repeatedly rely on the hospitality of the more centrally located small group. Throughout the remainder of the year all important business must be carried on through correspondence. The feasibility of organizing into districts has been considered repeatedly but we feel that we are not a sufficiently large or strong group to do this without detriment to the state organization. The newsletter instituted last year has proved helpful in binding us together and the turn-over in membership seems less rapid than in other areas. These two factors help maintain our morale.

OFFICERS

President	Nancy Vail, O.T.R.
Vice-Presidents	Joan Kalb, O.T.R.
	Barbara Wallin, O.T.R.
Secretary	Aldean Dahl, O.T.R.
Treasurer	Doris Hartman, O.T.R.
Delegate	Nancy L. Rice, O.T.R.
Alternate Delegate	Nancy Vail, O.T.R.

SUMMER LABORATORY

A summer laboratory program at Teachers College, Columbia University, New York City, offers the following schedule:

July 15-26, Supervision and Staff Relations.

August 5-16, Inservice Education and Professional Development.

August 19-30, Teaching and Learning in Higher Education.

Graduate credit will be available for the first two programs under specified conditions of prior admission to the College.

For further details write to Dr. Kenneth F. Herrold, Coordinator, Box 304, Teachers College.

Reviews

OCCUPATIONAL THERAPY-MANUAL OF REFERENCE FOR PERSONNEL, prepared under the supervision of Virginia Scullin, O.T.R., New York State Department of Mental Hygiene, 210 pp., 1956.

This manual was written for use in in-service training of recently recruited occupational therapy personnel at the various levels of therapist, instructor and aide, students from schools of occupational therapy in clinical practice and student nurses working in institutions of the New York State Department of Mental Hygiene. Since these institutions are primarily for mental illness, mental deficiency and convulsive disorders, emphasis has been placed on occupational therapy in these areas. However, the manual is broad in scope and compact coverage on subjects ranging from forms and records to occupational therapy for physical rehabilitation are dealt with.

A chapter devoted to occupations adapted to I.Q.'s between 25 and 75 is valuable not so much for the crafts suggested for various I.Q. levels, but as a guide which may indicate whether activities should or can be adapted to the intelligence level of the patient concerned. The section on analysis of media relating the economic and therapeutic criteria by which crafts are evaluated will be significant to the new employee and student in attempting to explain the "why" for a particular craft. A chart listing the most frequently used drugs in psychiatric hospitals, a suggested list of materials and supplies for art programs, and descriptive illustrations of special programs for the incapacitated epileptic and patients needing habit training, plus the brevity with which the manual was written, indicate its use as a ready reference to occupational therapy in New York mental hygiene institutions.

The manual should be useful as one source in an on-the-job training program for new employees and students. Even though the material is specifically designed for use in New York mental hygiene institutions, all professional people should find this booklet informative, particularly the condensed yet thorough presentation on occupational therapy history, the several chapters on psychiatry, regression and ways of meeting it, emotionally disturbed children, and epilepsy and mental deficiency.

—Lester M. Brower, MA., O.T.R.

CLINICAL STUDIES IN NEUROLOGY, Harry Lee Parker, M.D., M.S., F.R.C.P.I. Charles C. Thomas, Illinois, 1956, 364 pp.

This is an unusual book in that the style is in the form of bedside lectures given to medical students usually in the presence of the patients. Information about each patient including the history and findings is usually given prior to the diagnosis and prognosis. Many of the psycho-sociological implications of the neurological findings are discussed, so that the reader is able to view the neurological disorder in terms of the patient as a human being and not just mere symptoms.

The more common diseases and a few rare ones with the most typical examples of each one are discussed. The book is not a reference volume for all the disorders of the nervous system, but many of the areas it does cover will prove to be most helpful for the occupational therapist who works with patients of this type and deals with them as whole beings.

—Patricia Holser, O.T.R.

REGENERATION IN THE CENTRAL NERVOUS SYSTEM, Edited by William F. Windle, Ph.D., Sc.D. Charles C. Thomas, Springfield, Illinois, 1955, 311 pp., $9.50.

Many of the world's investigators in the field of central nervous system regeneration contributed the essays and discussions composing the content of this monograph. The material presented challenges the previously accepted hypothesis that regeneration in the central nervous system of man is impossible.

Research data are presented which substantiate functional return as a result of central nervous system regeneration in lower animals, including fish, amphibia, reptiles, and birds. Attempts at fostering regeneration in the higher vertebrates, including laboratory mammals, have been less successful but hopeful. The less specialized animals appear to have the ability to produce, in some instances, new neurons from indifferent cells when the necessity arises.

There is definite evidence that regeneration in the human central nervous system is possible, although it has not, at this point, been sufficient to result in predictable return of function. The factors responsible for anatomical functional regeneration in the central nervous system remain unclear, although research presented indicates progress is being made in this area.

A comprehensive bibliography of the subject is included.

A. Jean Ayres, O.T.R.

INDUSTRIAL RECREATION, Jackson M. Anderson, Ph.D. McGraw-Hill Book Company, Inc., New York, New York, 1955, 304 pp., $5.00.

The author gives a history of the growth and development of industrial recreation in the United States as well as giving a guide to organization and administration of new programs.

Various problems have arisen in our society as a result of advances made such as the shorter work day, specialization, earlier retirement, and the longer life expectancy. The employee recreation programs that have been instituted have allowed workers to get a release for their pent-up emotional drives, satisfy their creative desires, and develop interests and friendships they can further explore after retirement. The programs have also helped to establish a friendly feeling between employer and employee that otherwise might not have been present.

Much research has gone into the compiling of material for this well written and interesting book.

The chapter on program activities is of particular interest to occupational therapists. The general grouping of social, cultural, physical, and outing activities is broken down into functions that have proven to best suit all age groups.

—Eunice Ford, O.T.R.

EMOTIONAL PROBLEMS OF EARLY CHILDHOOD, edited by Gerald Caplain, M.D. Basic Books, Inc., New York, 1955, 526 pp., $7.50.

This book is a compilation of material presented at the International Institute of Child Psychiatry held in Toronto during the summer of 1954.

It is divided into three sections: "Preventive Aspects of Child Psychiatry;" "The Relation of Physical and Emotional Factors," and "Problems of Hospitalization;" and "Problems of Psychosis in Early Childhood." Psychiatrists from around the world presented clinical cases illustrating the problems presented in each section. Each case was then discussed by the institute participants.

The reports of current research in the prevention, diagnosis, and treatment of emotional problems in young children give an insight into family relationships along with the most recent thinking in this area.

An occupational therapist can gain basic understanding of techniques used by doctors in treating this type of child, as well as the factors that contribute to the fundamental problem. With this knowledge she or he can better carry through a treatment program.

—Eunice Ford, O.T.R.

NEUROSIS AND PSYCHOSIS, Beulah Chamberlain Bosselman, M.D., Charles C. Thomas, Springfield, Illinois, 1953, 186 pp., $5.75.

This book is a compilation of lecture material that the author has given as orientation in the field of psychiatry for medical and post-graduate students at the University of Illinois College ef Medicine.

The book is well written. It gives a clear concise picture of the symptomatology, psychodynamics, prognosis and treatment of various psychiatric disorders.

The student preparing for the registration examination and a therapist who has not been working in the psychiatric area who wishes to review motives and other causative factors in mental life will find this book to be an excellent reference.

—Eunice Ford, O.T.R.

CLUES IN THE DIAGNOSIS AND TREATMENT OF HEART DISEASE, Paul D. White, M.D. Charles C. Thomas, Springfield, Illinois, 1955, 185 pp., $5.50.

Simple clues for cardiovascular diagnosis are explored thoroughly by the author in this book that he wrote for the family physician or general practitioner. Dr. White puts special emphasis on the clues given by the patient through his appearance and mental attitude. This book gives a vivid description of how a successful and world renowned doctor considers and treats the whole person.

—Eunice Ford, O.T.R.

A GUIDE FOR AUTHORS, Payne E. L. Thomas, Charles C. Thomas, Springfield, Illinois, 1954.

A detailed, well-constructed handbook for authors. Although a general text, it is an useful guide for scientific writers.

OUTPATIENT PSYCHIATRIC CLINICS, National Association for Mental Health, Inc., 1956, $1.50.

A directory of 1954-55 clinics and other mental health resources in the United States and its territories including the clinic schedules and professional staff.

GENERAL SHOP BENCH WOODWORKING, Verne C. Fryklund, Armand J. La Berge, McKnight & McKnight, Bloomington, Ill., Fourth Ed. 1955, 152 pp., $3.00.

A detailed, well illustrated textbook on the details encountered in woodworking from planning the project and ordering the lumber to executing and finishing the project.

Bench Woodworking will make a good reference book for patients first encountering woodwork as an activity in the occupational therapy department.

INTEGRATION OF A CENTER PROGRAM WITH COMMUNITY AGENCIES, William F. Stearns, A.M., *Archives of Physical Medicine and Rehabilitation*, Vol. 37, No. 7, July, 1956.

Modern rehabilitation centers utilizing available resources within the community are finding their total program more effective. Services within the center are integrated to provide purposeful treatment to meet the needs of the patient. However, these services combined with resources available in the community aid the patient to achieve his total rehabilitation objective more completely.

Two factors influence this center-community integration. First, the center must be aware of community needs and resources. Secondly, the center is mainly interested in restoring the patient to a useful and satisfying life, utilizing whatever resources are available. The establishment of new centers involves study of needs and resources of the community. Since many areas have centers established before community agencies were available reevaluation of purposes and programs must be made in terms of present needs.

An example was cited of a rural rehabilitation center at Saranac Lake. In 1935 it was renowned as a treatment center for pulmonary tuberculosis. Treatment included bed rest, good food and fresh air which proved effective in arresting the disease and restoring bodily health. Prolonged hospitalization seemed to accentuate psychological, social and vocational problems and after recovery many patients faced a serious problem of readjustment to the community. In an effort to alleviate this problem the Saranac Lake Rehabilitation Guild, with medical supervision, started an educational program. A founding grant from the Carnegie Corporation of New York provided financial support. Professional and financial assistance came from the state department of education in 1938 and a counseling service was instituted in 1945. A sheltered workshop was added, sponsored by Altro Work Shops of New York City, to build work tolerance during hospitalization. Earlier diagnosis and drug therapy shortened the length of hospital stay and the importance of Saranac Lake as a cure center declined.

The Guild directors re-evaluated their program and found that many of the methods used in meeting the needs of their patients could be applied to other disability areas. With competent medical supervision, consultation with the district health office and conferences with representatives from state and federal offices of vocational rehabilitation, Saranac Lake emerged as a comprehensive rehabilitation center.

Last year the Guild applied for a special project grant from the Federal Office of Vocational Rehabilitation to study methods of providing comprehensive rehabilitation to members of rural communities. It is under the direct supervision of the medical college of the State University of Syracuse, located on the edge of the study area. As a result of this project the Guild hopes to answer some of its own questions as well as provide other rural areas with effective rehabilitation procedures.

The integration of programs begins when the patient is referred to the center from the community. Sources of referral are from many agencies such as schools, divisions of vocational rehabilitation, unions and insurance companies in addition to private physicians. These agencies, through joint conferences and written reports from the center, take part in the rehabilitation process. When changes in treatment are indicated clearance is sought from the referring agency. The center recommends the use of other community resources when indicated and integrates them into the patient's program. This is especially important at the time of discharge whether it is related to placement, continuation of service or follow-up.

—Anna M. Doudlah, Lt., AMSC (OT)

BUSINESS PRACTICES IN REHABILITATION CENTERS, Arthur A. Rodriquez, M.D., *Archives of Physical Medicine and Rehabilitation*, Vol. 37, No. 7, July, 1956.

Fees charged for services rendered represent the major source of income for some rehabilitation centers. They should be computed on the basis of actual cost of treatment considering direct labor required, cost of equipment and overhead.

Direct labor is the time consumed by the therapist in giving treatment and is computed by multiplying the average productive hourly rate by the time consumed. Average productive hourly rate is based on the average total monthly salary of the therapists divided by the monthly productive hours. Factors such as sick leave with pay, vacations with pay, cancellations of treatment and other unforeseen events must be considered. Monthly productive hours is assumed to be 70 to 80 per cent of the total paid hours.

Overhead expense incorporates such services as medical supervision, power, light, janitor service, telephone, linens, and all others not including direct labor, maintenance and repair, and depreciation. Overhead expense is based on the total number of patient hours which will absorb this cost. It is computed on the basis of number of patients treated per hour multiplied by the working hours per day by the number of days worked per month. The monthly overhead expense is then divided by the patient hours per month to obtain an average hourly rate. This rate is then used to compute the overhead expense for a particular treatment by multiplying it by the time the patient spends in the clinic. Since some forms of treatment require the patient to occupy time and space without direct labor, allocation of overhead expense is an important consideration.

Equipment expense includes machines and related items used in treatment plus furniture in the clinic and reception room, cost of booth installations, lamps and tables. An average life is assigned to each item and depreciation computed on that basis. Yearly maintenance and repair costs are then added and equipment expense per hour is obtained by dividing the total yearly equipment expense by the actual or anticipated hours it will be used. In order to spread this cost evenly for all patients, an average equipment cost per patient may be directly applied to the patient.

Centers vary widely in their service fees, some charging on the basis of modalities, others using a per diem charge. In a recent study, fees charged by twenty-four centers were obtained. Thirteen centers reported a charge for examination and evaluation ranging from $10.00 up to $25.00; this included physical examination and physical medicine tests. One center listed a $50.00 minimum charge but included psychological testing and routine consultants in their evaluation service. Special tests or consultations were listed separately by most of the centers. Eight facilities listed charges for modalities ranging from $1.50 to $4.00 exclusive of Hubbard tank and general body massage.

The per diem fee, based on an average cost of treatment of a given disorder, is a more simple and convenient method of charging. Included in the fee are the same factors of labor, overhead and equipment.

Minimizing costs in a rehabilitation program is important to efficient over-all operation as well as to the

patient. It is dependent upon prescription of treatment, supervision and limitation of therapy to its essential elements.

—Anna M. Doudlah, Lt., AMSC (OT)

OBSERVATIONS ON PHANTOM-LIMB PHENOMENA, William B. Haber, *Archives of Neurology and Psychiatry*, Vol. 75, No. 6, June, 1956.

There are three theories as to the etiology of the phantom-limb: a peripheral view, a central view and a combination of these. The peripheral theory attributes the phantom limb to sensations arising from the nerve endings in the stump, the central theory believes the experience a process of the CNS and independent of sensory impulse from peripheral stimulation. Support for both these views seems indirect. Theory of mixed origin is supported by W. K. Livingston who feels that peripheral irritation can initiate a central, self-perpetuating circuit.

The author made a survey of previous studies related to the origin of the phantom limb and presented the results of a study by Teuber and his associates. The study used forty above knee amputees and the findings are as follows:

1. Distal parts of a lost limb predominate over proximal parts and some phantoms have proximal "gaps."
2. Certain qualities of sensation ("tingling") are more frequently reported than others.
3. Motions of the phantom are more often adduction and abduction.
4. Most phantoms gradually "shrink," following a definite pattern in their shrinkage, with the distal parts most persistent and a resulting telescoping of the distal part into the stump.

The above was interpreted as supporting the central theory. The extent of sensation in the phantom is felt to be relative to sensory representation in the central nervous system (large for toes, small for thighs) and quality of sensation similar to that evoked by electrical stimulation of the sensory cortex. Further support of the central factor was sensory "trigger-zones" on the stump. Touch stimulation of these areas resulted in tingling which spread distally in the phantom, but the spread did not correspond to normal distributions of peripheral nerves.

Measurements of two-point discrimination showed that the stump surpassed the corresponding regions of the sound limb, indicating that the stump now had some functions of the more distal portions of a normal limb. Thus some central reorganization seems to have occurred. Light touch threshholds and point localizations were measured also, with similar results and the added finding that stump sensitivity conformed to the type of phantom reported by the amputee. "Telescoped" phantoms showed higher gain in stump sensitivity than those with phantom limbs of normal dimensions.

As a result of an investigation of twenty-four above elbow amputees, the author concluded that the quality of phantom sensations are rarely "natural" but also rarely plainful. Painful phantoms did not seem to be similar to the pain felt at original trauma. The study seemed to show no correlation between the position of the phantom and the position the extremity was in at the time of injury. Added sensations were noted such as the feeling of a ring or a watch on a phantom limb but these were usually items the amputee wore prior to loss of limb.

The dimensions of the phantoms described were graphically shown by pencil sketches which each man submitted. All but two subjects felt their phantoms had "shrunk." Each man involved rated the parts of his phantom limb which were most "vivid" and the results made it obvious that the distal portions of the hand were the most persistent. Movement most frequently felt in the phantom was impulsive "reaching." Half of the group were able to "will" movements. The ability to make a fist seemed most dominant, while opening of the hand was more difficult. The illusion of having the phantom penetrate solid matter was the result of having some real object occupying the same area as the phantom. This illusion was common for the amputee with an "extended" phantom but not for the "telescoped" one.

The author was surprised to find no relationship between the type of prosthesis (functional or cosmetic) and the type of phantom experienced by the amputee. There was no consistent relationship between the phantom and whether or not a man wore a prosthesis continually, frequently or never.

In the final comment, the author pointed out that there is almost a universal phantom-limb phenomenon but almost complete absence of painful phantom. Much of the above information could be compatible with a peripheral theory of origin but not the process of "fading" which may last years. Explanation for this could be a mixed theory, where the central nervous system gradually increases suppression of sensation evoked by continual peripheral impulses. In summarizing, the author interpreted his present observations and those made earlier, as supporting the central theory of origin.

—Winifred J. Watson, O.T.R.

RECOVERY OF POWER IN LEG MUSCLES FOLLOWING POLIOMYELITIS, Robert Palmer and Carl D. Martz, M.D., *The Physical Therapy Review*, Volume 36, Number 7, July, 1956.

This research was undertaken with a three-fold purpose: (1) to determine whether early muscle examinations have prognostic value, (2) to study the return of function in muscles weakened by poliomyelitis, and (3) to determine the ultimate fate of muscles whose insertion has been transferred. The study was made of nine hundred ninety-seven individual muscles in one hundred and thirty children who were from five to twelve years of age when they contracted poliomyelitis. All cases had involvement of muscles below the knee, which required physical therapy. The dates of onset were quite evenly distributed over a ten year period. Because of possible difficulty in testing muscles at the onset of illness the "base" or initial test was performed after two months of paralysis. Manual muscle tests were performed throughout the experiments.

Results of the research indicate that examination of muscles done six to ten weeks after the onset of illness has definite prognostic value if, on the initial or base test, the muscles are of zero, trace, good or normal strength. The tests are of less reliable prognostic value if the base tests show the muscles to be either poor or fair. It is to this latter group, then, that we owe the most intensive efforts of the physician and the physical and occupational therapist. The manual muscle testing done throughout the experiments cannot be considered entirely adequate for all muscles, due to the subjective nature of the test and the inaccuracy of testing normally strong muscles with the normally less strong. Good to normal muscles of locomotion and weight bearing seemed to be the most difficult to grade accurately. The method of testing used appears to be the best method available and the best hope of progress lies in its refinement and amplification.

This research indicates that little power is gained by

base zero, trace, poor or fair muscles after one year following the onset of polio. Base good and normal muscles complete the major portion of recovery by the end of nine months. This would indicate, then, that if corrective surgery to the leg and foot is contemplated, a year after onset would appear to allow sufficient margin of safety to exclude the possibility of late recovery.

A muscle will probably lose from one to two grades of power when the insertion is transplanted. This should be taken into account when a transplant to correct imbalance is contemplated.

It should again be pointed out that this study was confined to muscles which move the foot, so the results may not be applicable to muscles of the upper extremity. In fact, W. J. W. Scharrard's study entitled "Muscle Recovery in Poliomyelitis," suggests that the rate and extent of recovery in the muscles of the upper extremity are greater than those of the lower.

—Maryelle Dodds, Capt., AMSC (OT)

PSYCHOLOGICAL AND EMOTIONAL ASPECTS OF DISEASED OR INJURED PERSONS, Elta N. Kern, B.S., *The Physical Therapy Review*, Vol. 36, No. 5, May, 1956.

Through a consideration of the psychological aspects of paraplegic, tuberculous, poliomyelitis and cerebral palsied patients, the author hopes to contribute to the understanding of patients' problems, and to suggest appropriate responses of physical therapists and other personnel to these problems. The above four diagnoses were selected to include disabilities existing since childhood as well as those which may be acquired in adult life. The paper attempts to show typical responses of groups of patients to the above conditions and only personality patterns and emotional reactions which are considered to be within the realm of psychologically "normal."

From a somewhat detailed study of the psychological and emotional reactions of patients in the selected four areas, the following answers are given to these five questions.

(1) "What are the problems of the sick or injured person in his adjustment to his disability?"

The problems seem to lie in the acceptance of the disability, evaluation of remaining abilities, and realistic planning for life commensurate with these abilities. With the paraplegic and poliomyelitic patient, the disability is at its maximum at the onset, so the patient can look forward to slow, steady progress to the point of maximum recovery. The tuberculous patient will be physically restricted for the rest of his life, while the cerebral palsied child must wage a long tedious battle to attain rehabilitation.

(2) "Are there differences in the problems of children with congenital or acquired disabilities and those of disabled adults?"

Yes, in relation to personality development. The child with a disability forms his personality in accordance with his disabilities and is not faced with revision of personality patterns or vocational goals, as is the person who is disabled in adult life. The disabled child accepts, and uses more easily, prosthetic devices, for these are more impressed with function and are less inhibited by abnormal appearance. The parents of crippled children sometimes present a problem to the person who is rehabilitating the child.

(3) "What is society's responsibility for rehabilitation of the handicapped person? Is there need for revision of emphasis in public health education?"

Society must assume responsibility for maximum rehabilitation of handicapped persons. The increasing number of lives saved by medicine is resulting in an increasing number of handicapped people. Unless these people are rehabilitated and find a place in society, they will have to be supported. This may be difficult because of a seemingly inherent revulsion in society for the abnormal person.

(4) "What atmosphere in a hospital helps the patient to adjust to his problems in the best possible manner?"

The atmosphere of the hospital must be one that inspires confidence in the patient. The patient must be received with acceptance, understanding, and kindness, the latter tempered with discipline. In order to gain maximum rehabilitation for the patient, cooperation is necessary among the members of the medical team.

(5) "What implications are there in this study for the physical therapist in order that he may help patients to gain maximum recovery?"

Competent, thinking physical therapists are of prime importance because the interrelationship between the patient and his physical therapist is the most important element in the treatment program. It is important for physical therapists to avail themselves of the services of other members of the medical team in order to know as much as possible about their patients. Physical therapists must walk the tight rope between routine, mechanical treatment and over-identification and over-sympathy with the patients.

The author suggests that both the patients and the physical therapists adopt the following slogan as a basis for the task of rehabilitation. "God, give me the grace to accept what I cannot change, courage to develop what abilities I have, and the wisdom to know the difference."

—Maryelle Dodds, Capt. AMSC (OT)

ASSOCIATED REACTIONS OF THE UPPER EXTREMITY IN ADULT PATIENTS WITH HEMIPLEGIA—AN APPROACH TO TRAINING, Signe Brunstrom, M.A., *The Physical Therapy Review*, Volume 36, Number 4, April, 1956.

Hemiplegic patients with severe involvement may learn to ambulate but these patients often fail to show return of function in the upper extremity. When no response to muscle reeducation is obtained over a period of time, both the patient and the physical therapist may become discouraged and feel that further attempts are useless. Because no method of training should be left untried, it is suggested that a subcortical motion synergy which can be elicited on a reflex basis may serve as a wedge by means of which a limited amount of willed movement may be learned.

Experiments on twenty-six hemiplegic subjects of varying age, etiology and length of time after onset was conducted in the light of related experimentation by A. Simons on head positioning and that done at the Kessler Institute for Rehabilitation during 1951 and 1952 on "associated reactions," or movement synergies. While tests were made on both lower and upper extremities, the results of only the upper extremity tests are discussed in this paper.

The motions selected for testing were "resisted pull," with strong resistance to elbow flexion (flexion synergy) and "resisted push," incorporating not only extension of the elbow and pronation of the forearm, but also adduction and internal rotation at the shoulder (extension synergy). These motions were done with the patient's head in anatomical position, turned to the left, then to the right to determine what influence the tonic neck reflex might have on eliciting these synergies.

Of the twenty-six patients with hemiplegia which were investigated, in all but three were associated reac-

tions obtained. These reactions were typical flexion and extension synergies as described by Simons. Flexion synergy was more easily elicited in the upper extremity than was the extension synergy. Elbow flexion was found to be the strongest component of the flexion synergy, while adduction and internal rotation of the shoulder, the strongest components of the extension synergy. The associated reaction was seen to be effected by the tonic neck reflex in most cases. In the upper extremities, with but one exception, observations of the effect of contralateral resisted motion on the associated reactions revealed that a "pull" facilitated a "pull" and a "push" facilitated a "push." The knowledge and experience gained during this study is now being utilized for training patients with hemiplegia.

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Static exercise consisted of sustained wrist extension with the forearm in pronation. Against heavy resistance the full range of motion was maintained only momentarily.

Nociceptive components during static or dynamic exercises or their combination imposed considerable stress on the subjects. Additional complicating factors unconsciously affected the level of volitional performance.

The authors discussed typical experiments and results, and they presented with excellent continuity the graphic data derived from the ergograms.

As a result of static and dynamic work proceeding simultaneously, they found that the two types of exercises are mutually facilitatory. Dynamic exercise always augmented static work output in magnitude of 40%. Dynamic work also increased, but to a lesser degree. It was observed repeatedly that when the non-preferred hand performed its normal holding function, it was less affected by dynamic activity of the dominant limb than the reverse procedure.

The effect of varying the static load was studied to determine the relation of the severity of the exercise to the magnitude of the facilitatory influence. It was suggested that there is a greater revival in power when the static load is heavy than when it is light. Facilitation was 50% better than predicted when the load was heavy.

Background patterns during a unilateral neuromuscular act were discussed. Initial attempts to execute an unfamiliar act are associated with a widespread overflow of movement, but the contralateral limb is gradually excluded from the voluntary act. Electromyograms showed that the contralateral limb is never silent, although the background patterns never reach consciousness. The associated movement is at first opposite to the ipsilateral pattern, but when exercise stress becomes great in the terminal phase of the effort, reflex activity in the contralateral limb shifts to the homologous muscle groups as those participating voluntarily in the ipsilateral limb.

Further evidence presented supports the postulation that successful performance of simultaneous stressful static and dynamic exercise by the two halves of the body is contingent first, upon the ability to integrate dissimilar movement patterns into a unified plan, and secondly, upon the facility with which opposite sides of the body are maintained in awareness without confusion.

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The second consultant agreed that antispasmodic drugs give little or no benefit with this type of spasticity. The crux of treatment is active functional use of the affected extremity preceded by stretching, to be carried on over a period of months.

One consultant felt that in most cases the lower extremity may be expected to recover sufficiently to permit ambulation without aid; the other stated that if spasticity of the lower extremity is severe, braces should be applied and locked, to be released one joint at a time.

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The condition of frozen shoulder has been consistently observed subsequent to prolonged dependency and immobility of the upper extremity, from varied causes. Efforts to increase mobility on the part of the individual are notably painful and therefore minimal. Most frequently the condition occurs in middle life, more often in women than in men.

Treatment is considered by these authors as mandatory, lest permanent disability result. Hospitalization of the patient with the extremity suspended by the fore-

arm from an overhead bed frame is accompanied by an intensive closely supervised therapeutic exercise program. Manipulation of the shoulder joint is then effected in progressive stages with the patient under anesthesia. The arm is gradually abducted and externally rotated. Subsequent to each session of manipulation, the patient is placed back on the intensive exercise program, first in bed, later when ambulatory. The average length of hospitalization is ten days, with manipulations at 3 to 5 day intervals. No plaster casts or arm abduction splints are utilized at any stage. Only if unusual resistance to closed manipulation is encountered do the authors advise open operation.

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Suggested by the author is a recently developed technique of immobilization which is said to avoid these disadvantages listed. It is a matter of soft tissue fixation which keeps the distal interphalangeal joint securely in hyperextension without interfering with free movement of the rest of the injured finger, or of the hand. Silk sutures are passed from the palmar pad of the injured digit, through the finger nail, to the right and left side of the dorsal surface of the distal and middle segments, terminating just distal to the proximal interphalangeal joint. It is essential that the sutures be secured not only through the skin but through all soft tissue layers. Vinyl tubing is placed under the sutures so as to protect the palmar pad and the middle phalanx from pressure or pull of the sutures. A simple dressing (which may incorporate a simple splint to protect the finger from further injury) placed over the finger may be changed as often as required without disturbing the fragments. The period of "temporary disability" is reduced to only one or two working days, and immobilization interferes but slightly with the patient's normal activities. The sutures can be removed after four to six weeks, depending on weekly x-ray findings, at which time the fracture can be expected to be completely healed.

Information on this technique has been gained from a study of nine cases of mallet finger and distal phalanx fractures. The patients ranged in age from 14 to 45 years, the fracture being set and the joint immobilized after as much as 18 days from the time the finger was injured. Results are reported to be excellent with regard to healing of bone at the fracture site and to recovery of unlimited function of the distal interphalangeal joint.

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RESTORING AMPUTATED PORTIONS OF FINGERS, Notes to the Editor. *Journal of the American Medical Association*, Vol. 161, No. 8, June 23, 1956.

Traumatically amputated portions of fingers can be restored, but for practical purposes it is felt that restoration is rarely satisfactory. It may be attempted in the following ways: (1) The new digit may be made from abdominal skin, but this would not furnish stereognosis, and in a digit, sensation is usually of equal value with motion. An exception would be when one

remaining digit needs a mate for purposes of prehension. (2) A normal skin flap may be used to cover the tactile part of the new digit, resulting in essential stereognosis. (3) A normal digit, can be transferred from the same or opposite hand, with nerves and tendons joined to give sensation and motion, but this procedure may be mutilating and nutrition in the new digit will be poor. (4) Most practical is restoration of a new digit by the pedicle method so as to transfer sensation, vascularity and motion. This method applies to furnishing a thumb from a part of the index finger, for example.

It is concluded that a digit fashioned purely for cosmetic reasons has little to recommend it.

D. R. Street, Lt. AMSC (OT)

TREATMENT OF CHECKREIN SHOULDER BY USE OF MANIPULATION AND CORTISONE, Thomas B. Quigley, M.D., *Journal of the American Medical Association*, Vol. 161, No. 9, June 30, 1956.

The treatment of "checkrein shoulder" is discussed by the author following a differential definition of the syndrone, its etiology and pathology. Manipulation techniques are presented. Case studies are reported to illustrate results of the prescribed treatment.

"Checkrein shoulder" is differentiated from "frozen shoulders" by various criteria. There is a history, in a middle aged person, of several weeks of disuse imposed by pain frequently following a minor injury or an episode of inflammation. A gradual return of the lower ranges of shoulder motion is reported but a painful check to the upper ranges of motion is present. Resistance to ordinary treatment measures is usual. Findings include limited passive abduction of the humerus on the scapula at 45° and a limitation of internal and external rotation to about 50% of normal range. Varying degrees of atrophy of shoulder girdle musculature are evident; x-ray findings of demineralization and some calcific deposits may exist. A palpable and audible release of resistance (through an arc of 20° of abduction) during manipulation under anesthesia occurs. This arc is that occupied by the checkrein contracture of the subscapularis muscle in anterior-inferior joint capsule. A resulting free, near normal range of abduction and external rotation is to be expected.

Patients receiving such shoulder manipulations were given corticotropin (ACTH), cortisone, and/or locally injected hydrocortisone acetate to suppress postmanipulation pain.

Of 44 checkrein shoulders so treated over a five year period, the author reports that 33 promptly regained and maintained a normal painless range of motion; 11 improved to some extent, with some degree of pain, of limitation of motion, or both. Duration of symptoms in the latter group was 8.8 months as compared to six months in the former "cured" group. Mention is also made of six "frozen shoulders," not meeting the checkrein criteria, which did not benefit from manipulation procedures. Caution must be exercised, the author warns, lest fracture of the anatomic neck of the humerus result.

—D. R. Street, Lt., AMSC (OT)

APPARATUS AIDS: ADAPTED FLOOR LOOM FOR UPPER EXTREMITY INVOLVEMENT, Cornelius A. Kooiman, O.T.R., M.A., Frederic J. Kottke, M.D., *Archives of Physical Medicine and Rehabilitation*, Vol. 37, No. 6, June, 1956.

It would be impractical to try to describe to the readers of this journal the construction of the apparatus described in the above mentioned *Archives of Physical Medicine and Rehabilitation*. Rather the reviewer suggests that those who are interested in such a piece of equipment refer to this article. A photograph, description of construction, and a list of materials required for construction accompany the article.

The adaptation is "useful for increasing range of motion of the shoulders and especially for providing resistance exercise to the shoulder girdle adductors, depressors and arm extensors to build up endurance for crutch walking."

—Elizabeth M. Nachod, Capt., AMSC (OT)

PROGNOSTIC STUDIES IN CHILDREN WITH CEREBRAL PALSY, Eric Denhoff, M.D., Raymond Holden, M.A., Maurice Silver, M.D., *Journal of the American Medical Association*, Vol. 161, No. 9, June 30, 1956.

This study attempts to evaluate the validity of pneumoencephalography and psychological examinations in the prediction of the future adjustment of cerebral palsied children. The study was performed at the Meeting Street School in Providence, Rhode Island, with a sample group of 50 children with cerebral palsy over a two year period.

Seven diagnostic groupings were established on the basis of pneumoencephalographic findings and clinical diagnosis. From this classification, correlations were run between initial psychological predictions and actual clinical progress with an agreement of 81%, and between pneumoencephalographic predictions and actual clinical progress, with a 72% agreement.

The most reliable prognostic tool was found to be psychological tests. Pneumoencephalography, it was felt, should be reserved for difficult cases, not for routine use. The electroencephalogram was of value only in the diagnosis of seizures in the cases studied.

From the results of this study, it would appear that among the children with cerebral palsy, those most apt to make adequate life adjustments are the ones with spastic hemiplegia, with unilateral brain damage and with intelligence low-average or better, or those of any diagnostic classification who are mildly handicapped and with good intelligence and a relatively normal pneumoencephalogram. Children with spastic quadriplegia, with bilateral brain damage and mental deficiency, have the poorest prognosis for the future.

—D. R. Street, Lt. AMSC (OT)

Personality Factors . . .

(Continued from page 96)

One other significant coefficient of correlation was found between the *T* factor and pediatric clinical training. The *r* was +.22, significant at the 5% level of confidence. It is possible that the thinking introvertive type of individual is more sensitive to the moods of interest of children, or this may be a relationship which occurred by chance.

SUMMARY

Occupational therapy students at San Jose College were given the Kuder Preference Record and Guilford's STDCR Inventory. These scores were compared with grades in each field of clinical

training, a total grade, and the registration examination in order to see whether the tests could be used to predict on-the-job success. The criteria used were grades on the occupational therapy student clinical training report and the registration examination given by the American Occupational Therapy association.

Pearson's product-moment of correlation was used. At the 1% level of confidence, correlations were found for "literary interest," as measured on the Kuder Preference Record, and for the *R* factor, as measured on the Guilford STDCR Inventory, with grades on the registration examination.

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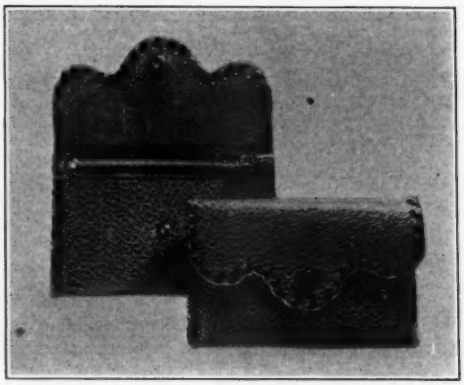

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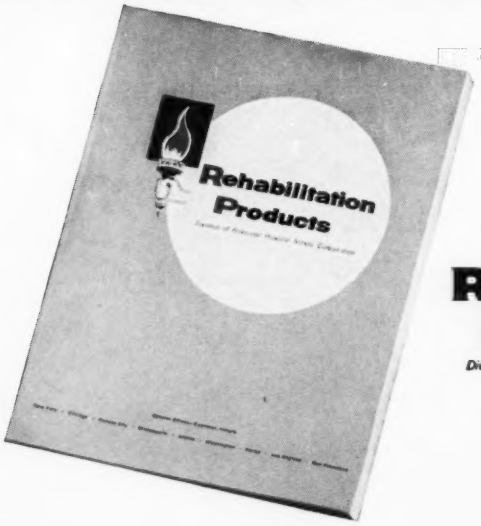

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